

Audubon

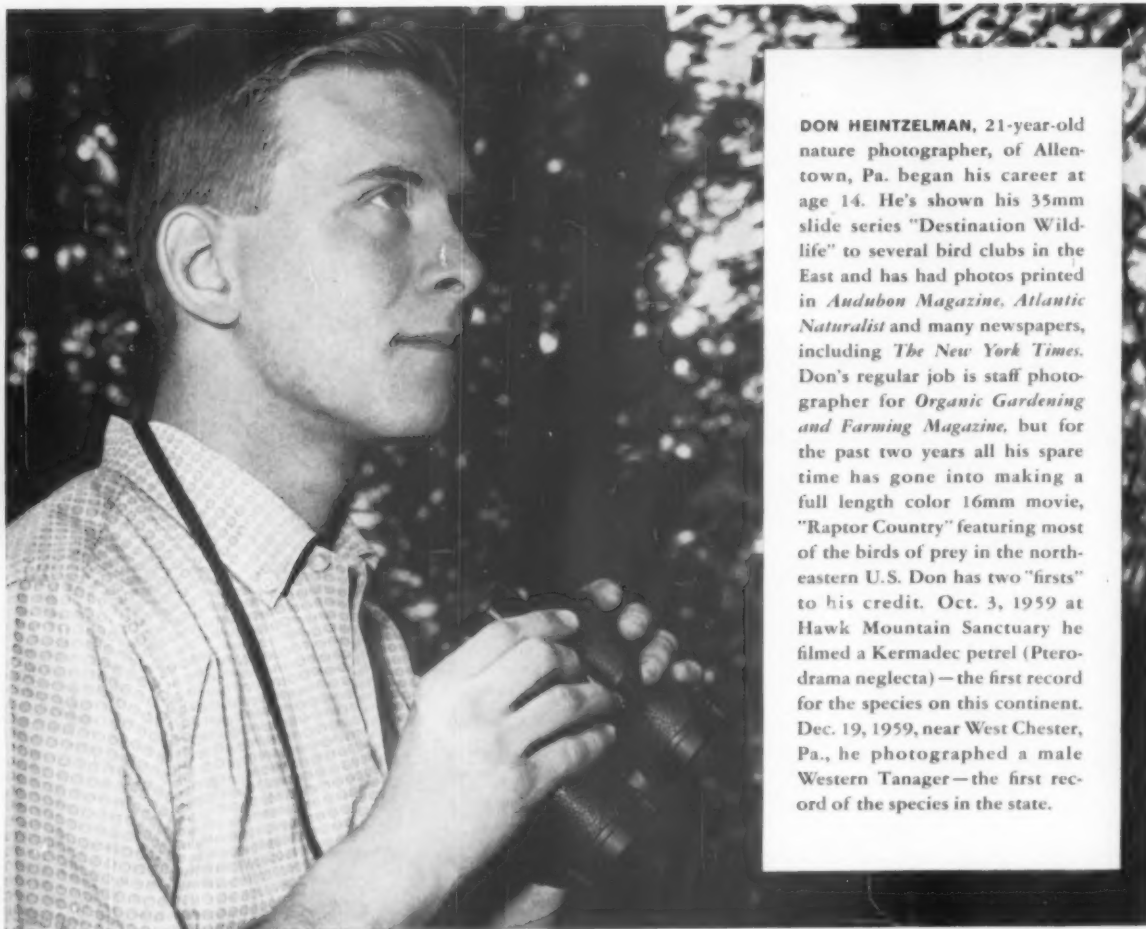
JULY-AUGUST 1960

Magazine

ONE DOLLAR

PUBLISHED BY THE NATIONAL AUDUBON SOCIETY





DON HEINTZELMAN, 21-year-old nature photographer, of Allentown, Pa. began his career at age 14. He's shown his 35mm slide series "Destination Wildlife" to several bird clubs in the East and has had photos printed in *Audubon Magazine*, *Atlantic Naturalist* and many newspapers, including *The New York Times*. Don's regular job is staff photographer for *Organic Gardening and Farming Magazine*, but for the past two years all his spare time has gone into making a full length color 16mm movie, "Raptor Country" featuring most of the birds of prey in the northeastern U.S. Don has two "firsts" to his credit. Oct. 3, 1959 at Hawk Mountain Sanctuary he filmed a Kermadec Petrel (*Pterodroma neglecta*)—the first record for the species on this continent. Dec. 19, 1959, near West Chester, Pa., he photographed a male Western Tanager—the first record of the species in the state.

"sharp, clear, distortion-free images..."

DON HEINTZELMAN SAYS: "Lens quality of both binoculars and cameras is of paramount importance to the wildlife photographer. In binoculars, only the finest—Bausch & Lomb—provide the sharp, clear distortion-free images vital to correct identification of rare and unusual birds in the field."



*Bausch & Lomb 7x35mm Binoculars.
Favorite in the Field.*

Donald S. Heintzelman

Don's forthright endorsement is the 44th in a series from recognized naturalists made without remuneration. Our thanks to Don for his recommendation.

WRITE FOR FREE LITERATURE
on the famous line of quality
Bausch & Lomb 7x35mm
binoculars to learn more
about their superior features.
Bausch & Lomb Incorporated,
Rochester 2, New York.

BAUSCH & LOMB



MAKERS OF: BALOMATIC PROJECTORS • CINEMASCOPE LENSES • RAY-BAN SUN GLASSES
BINOCULARS • MICROSCOPES • QUALITY EYEWEAR • RIFLE SIGHTS • SCIENTIFIC INSTRUMENTS

Audubon magazine

Volume 62, Number 4, Formerly BIRD-LORE

PUBLISHED BY THE NATIONAL AUDUBON SOCIETY

A bimonthly devoted to the conservation of wildlife, plants, soil, and water

CONTENTS FOR JULY-AUGUST 1960

Letters	150
The Tule Lake Threat Must Be Removed	153
by Carl W. Buchheister	
The Flying Mammals	156
by Helen Hoover	
The Wonders I See	160
by John K. Terres	
"The Price of D.D.T."	163
Bob Allen—Man With a Mission	164
by John O'Reilly	
The President Reports to You	167
by Carl W. Buchheister	
A "Good Samaritan"	168
by H. H. Pittman	
Hail: Great Destroyer of Wildlife	170
by Allen G. Smith	
Owls: Emblems of the Night	172
by Peter Farb	
Nature in the News	179
A Thorny Assignment	180
by Gordon S. Smith	
Bird Finding With Sewall Pettingill	184
Attracting Birds	186
Book Reviews	190
Your Children	194
by Shirley Miller	
Cover: Photograph of a tiger swallowtail butterfly on wild roses by Lynwood M. Chace.	

John K. Terres, Editor

Andrew Bihun, Jr., Advertising Manager • Frederick L. Hahn, Art Director

CONTRIBUTING EDITORS: Arthur A. Allen, Henry Beston, George Dock, Jr., Louis J. Halle, Jr., John Kieran, Robert Cushman Murphy, Hayden S. Pearson, Donald Culross Peattie, Roger Tory Peterson, George Miksch Sutton, Edwin Way Teale.

AUDUBON MAGAZINE is published bimonthly by the National Audubon Society. Individual subscription \$5.00 per year in U. S., its possessions, and Canada; 2 yrs.—\$9.00; 3 yrs.—\$12.00; Foreign, 1 yr.—\$5.00. Subscription rate to institutions, 1 yr.—\$4.00; 2 yrs.—\$7.50; 3 yrs.—\$10.50. Checks and money

orders should be made payable to AUDUBON MAGAZINE. Send changes of address and claims of undelivered copies to Subscription Department. Editorial and advertising office, 1130 Fifth Avenue, New York 28, N. Y. Reentered as second-class matter April 29, 1942 at the Post Office at New York, N. Y., under the Act of March 3, 1879. Copyright, 1960 by the National Audubon Society. Postmaster: If undeliverable, please notify Audubon Magazine, on form 3578 at 1130 Fifth Avenue, N. Y. 28, N. Y.

INDEXED IN THE READER'S GUIDE TO PERIODICAL LITERATURE

JULY-AUGUST, 1960

When writing advertisers, please mention Audubon Magazine

BINOCULARS ARE OUR BUSINESS!



Since 1923 we have dealt exclusively in binoculars and scopes.

WHEN YOU NEED BINOCULARS

We offer Bausch and Lomb, Leitz, Bushnell and the low-priced Mirakel Special line from \$29.50. Every glass is pre-serviced and instrument-checked in our own *Binocular Workshop* to guarantee you better viewing. The Mirakel Guarantee on your glass means it is:

- Checked for clarity
- Shock-tested & loose parts secured
- Aligned to 1/1000 (Twice as strict as commercial practice)

All structurally defective glasses returned to importer.

This unique service protects you from the defects often found in imported binoculars in all price ranges, due to damage in shipping.

Mail the coupon below for FREE catalog showing 3 complete lines with quality comparison and information on models we adapt especially for birding. Also, scopes from \$54.50, equipped with our custom-built base to attach scope directly to tripod, shoulder strap, and other accessories. 30 day trial on all instruments, with full refund guarantee.

You will also receive FREE the binocular articles we have written for Audubon Magazine, if you mention the name of any birding group to which you belong. (Price to others—10¢.)

WHEN YOUR BINOCULARS NEED REPAIR

Send them to us for free instrument check and same day estimate. 4 day service on complete overhaul. We can make many "defective" binoculars "better than new" by correcting assembly.

WRITE THE REICHERTS for assistance on all binocular and scope problems.

Serving Birders since 1923

Mirakel Optical Co., Inc.

14 W. First St. Mt. Vernon 2, N. Y.
MO 4-2772

Open Saturdays 10-1 or by appointment except July and August

Mirakel Optical Co., Inc.

14 West First St., Mt. Vernon 2, N. Y.

Send free catalog with Audubon reprints to:

name.....

street.....

city.....state.....

name of bird club.....

NATIONAL AUDUBON SOCIETY

INDEXED IN THE READER'S GUIDE TO PERIODICAL LITERATURE

Your Membership supports this work

Audubon Junior Clubs, in which more than ten million children in schools and youth groups have been enrolled since 1910.

Audubon Camps, for training adults in nature and conservation at Medomak, Maine; Greenwich, Conn.; Norden, Calif.; Sarona, Wisconsin.

Audubon Centers for children show young and old the wonders of the natural world and our relationships to it: Audubon Center of Connecticut, Riversville Road and John Street, Greenwich, Connecticut. Aullwood Audubon Center, 1000 Aullwood Road, Dayton 14, Ohio. Audubon Center of Southern California, 1000 North Durfee Avenue, El Monte, California.

Audubon Screen Tours, lectures and color motion pictures of which 1,800, given by 30 lecturers, reach an audience of 50,000 people a year in some 200 cities.

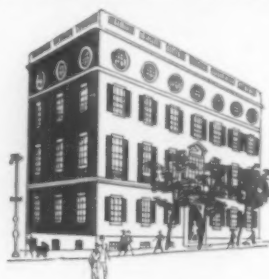
Audubon Wildlife Tours, to Corkscrew Swamp Sanctuary, Florida, and into the Everglades National Park, under direction of trained naturalists.

Branches and Affiliates of the National Audubon Society advance our work in more than 300 communities.

Photo and Film Department, from which rights to reproduce photographs and slides can be purchased, slides may be bought, and educational films rented.

Service Department, through which advice as to nature books, prints, bird, flower, and mammal cards, binoculars, etc., may be obtained, and such items purchased.

Research Projects, especially for species threatened with extinction.



Public Information Department, services members, and furnishes the press, TV, and radio with information about nature and conservation.

Publications: *Audubon Magazine*, sent to all members; *Audubon Field Notes* (\$3.00 a year), publishes results of bird watching, including seasonal reports and bird censuses; *Nature Program Guide*, *Audubon Junior News*, and *Audubon Nature Bulletins* are for teachers and youth leaders.

Sanctuaries. The National Audubon Society's wardens patrol upwards of 1,000,000 acres of land and water including Audubon Center, Greenwich, Connecticut; Hunt Hill Sanctuary, Sarona, Wisconsin; Rainey Wildlife Sanctuary, Abbeville, Louisiana; Roosevelt Memorial Sanctuary, Oyster Bay, Long Island; San Gabriel River Wildlife Sanctuary, El Monte, and San Francisco Bay Sanctuaries, California; Todd Wildlife Sanctuary, Hog Island, Maine; Corkscrew Swamp Sanctuary in Florida; and other extensive areas in Florida and Texas.

Your Membership will advance public understanding of the value and need of conservation of soil, water, plants, and wildlife, and the relation of their intelligent treatment and wise use to human progress.

Regular	\$6.50	Active	\$ 25.00
Husband and Wife		Supporting ..	50.00
Regular	10.00	Contributing	100.00
Sustaining	12.50	Life	300.00
Husband and Wife		Affiliated	
Sustaining ..	20.00	Clubs ...	15.00
Membership includes	<i>Audubon Magazine</i> .		

Your Will: May we suggest that you help to insure the continuance of the ever-widening influence of our program and philosophy by remembering the National Audubon Society in your will. Suggested bequest form: I hereby give, devise, and bequeath to the National Audubon Society, in the City of New York, in the State of New York, the sum of dollars (or otherwise describe the gift) to be used for the general purposes of said Society.

Directors: Mrs. John W. Aull, Kenneth K. Bechtel, Amory H. Bradford, Ernest Brooks, Mrs. John W. Donaldson, Whitney Eastman, Mrs. Richard V. N. Gambrell, Robert G. Goelet, Mrs. Henry B. Guthrie, Robert J. Hamerslag, Lawrence W. Lowman, Dudley H. Mills, Herbert H. Mills, Roger T. Peterson, Olin S. Pettingill, Jr., Chauncey Stillman, Phillips B. Street, James H. Wickersham.

Officers: Robert J. Hamerslag, *Chairman of the Board*; Herbert H. Mills, *Chairman, Executive Committee*; Guy Emerson, Robert C. Murphy, and Paul B. Sears, *Honorary Presidents*; John H. Baker, *President Emeritus*; Carl W. Buchheister, *President*; Irving Benjamin, *Vice-President*; Ernest Brooks, *Secretary*; Robert G. Goelet, *Treasurer*; George Porter, *Assistant Treasurer*; Shirley Miller, *Assistant Secretary*.

Regional Offices: Tropical Florida, 143 N.E. Third Avenue, Miami 32, C. M. Brookfield, representative, Elizabeth C. Wood, office manager; Pacific Coast, 2426 Bancroft Way, Berkeley 4, California, William N. Goodall, Pacific Coast representative, Mary Jeffers, office manager.

Letters

Birding in Iceland

Dr. Pettingill's article on Iceland ("Bird Finding with Sewall Pettingill," March-April 1959 issue) not only proved so useful after I arrived on the island that those pages of my *Audubon Magazine* became quite dogeared from repeated reference, but also it was actually what inspired me to go birdwatching in Iceland in the first place. I had a three-week September vacation in 1959, wanted to go to Berlin, hadn't enough time to go by ship, but wondered how I could afford the usual tourist-season air fares. Dr. Pettingill's suggestion, that a less-expensive air trip to Europe could be combined with a visit to Iceland's birds, just suited my plans. The Icelandic Airlines flight, incidentally, was just as comfortable as other tourist plane service, was less expensive than the big airlines, has even cheaper off-season fares after October 1, and cognac is included!

Really, the four-day stopover in Iceland wasn't long enough to do justice to the island's varied birdwatching opportunities. I hadn't time to look up some of the helpful people whose names were mentioned in the article, who might have been able to direct me to more of the out-of-the-way places for seabirds and raptors.

But Tjörninn with its variety of waterfowl—and a northern phalarope one morning—was a delight to me, and I got some satisfactory Kodachromes of the ducks and geese. Sudurnes, which, as I found out from the Reykjavik Tourist Bureau, can also be reached by one of the city buses (leaving downtown every half hour) netted me a list of 10 species of shorebirds.

Mývatn in September hadn't the astounding number of waterfowl of June, but it was completely free of the famous flies, and I was pleased to see a flock of female or immature harlequin ducks in one rapid stream there. The bus from Akureyri to Mývatn apparently stops running September 1, but the Akureyri Tourist Bureau found me a ride to Mývatn without too much delay, in a station wagon with some salmon fishermen, for the same price as the bus. On the return trip to Akureyri I found a jeep ride from Mývatn to Einarstadir, where I caught a bus (once a day each direction) to Akureyri. People wishing to visit Mývatn should allow several days and not have to be back in Reykjavik by some deadline-date, because of the

Turn to page 152



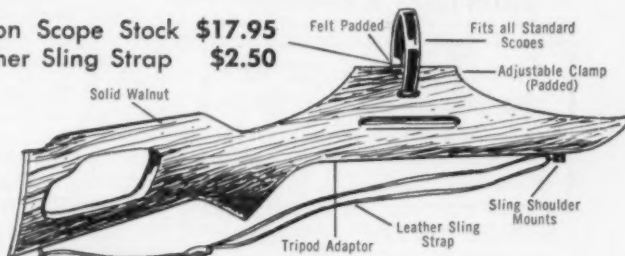
AVAILABLE
For the First Time

This perfectly matched combination is a must for every birder

Save \$7.95 on this SPECIAL
INTRODUCTORY OFFER

Complete outfit . . . Burton Model SS1-Spotting Scope. Burton Scope-Stock and Leather Sling Strap. **\$57.45**

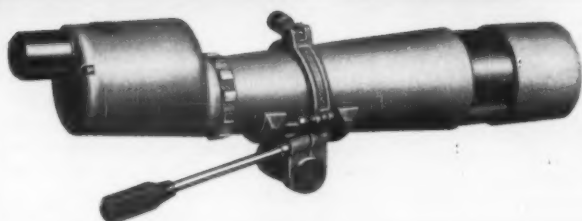
Burton Scope Stock **\$17.95**
Leather Sling Strap **\$2.50**



Designed and tested by one of the top ornithologists in the United States, MILTON B. TRAUTMAN, Ohio State Univ.

SPECIFICATIONS

Objective	Eyepiece	Field at 1,000 yds.	Exit Pupil	Relative Brightness	Length	Weight
60MM	15X	122 ft.	4.0mm	16.0	14 in.	29 oz.
60MM	20X	122 ft.	3.0mm	9.0	14 in.	29 oz.
60MM	30X	61 ft.	2.0mm	4.0	14 in.	29 oz.
60MM	40X	49 ft.	1.5mm	3.0	14 in.	29 oz.
60MM	60X	32 ft.	1.0mm	1.0	14 in.	29 oz.



Burton Model SS-1 Spotting Scope \$44.95

Extra eyepieces, each \$4.00

Precision, durable aluminum construction. Finest optics, hard coated for maximum illumination and sharpness of image. 5 year guarantee.

"I prefer Burton Binoculars because of their high quality and low cost"

OHIO STATE UNIVERSITY

Of the many binoculars on the market today I prefer Burton binoculars because of their high quality and low cost. A Burton binocular will give a lifetime of satisfactory service.

Donald J. Borror
Donald J. Borror
Prof. of Zoology & Entomology

The Ohio Historical Society
THE OHIO STATE MUSEUM, COLUMBUS 10

They have a wider field of view. They're light in weight for ease of handling, yet rugged enough to stand up under hard use on long trips. They keep a sharp focus.

Edward S. Thomas
Edward S. Thomas
Curator of Natural History

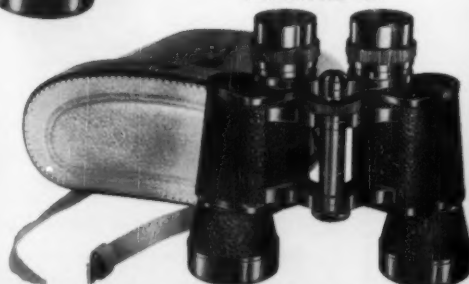


Professional Ornithologists Use Burton Binoculars . . . Why Shouldn't You?



7x35 cf fwf
with Cowhide case
\$65.00 Plus 10% Fed. Tax

7x35 cf
with Pigskin case
\$33.25
Plus 10% Fed. Tax



BURTON BINOCULARS

- 15 Other models to choose from
- 5 Year Written Guarantee
- Lifetime Service Plan
- 30 Day No Risk Trial

BURCO "Trailblazer" Binoculars

6x30 cf \$29.50
7x50 cf \$37.50
10x50 cf \$44.50



If not 100% satisfied your money refunded in full

Send for FREE Burton Binocular Guide Catalog and name of your local Dealer

The R. H. Burton Company

2504 Sullivant Avenue

Columbus, Ohio

FALLEN LEAF LODGE



On beautiful Fallen Leaf Lake

In the Sierra Nevada mountains of California. Special attention to Nature Study in area.

Write for illustrated booklet

Fallen Leaf Lodge
FALLEN LEAF P. O., CALIFORNIA

TELEPHOTO LOW, LOW PRICES

Thrilling telephoto shots for the taking! Discriminating users acclaim the DuMaurier precision-coated 7x50mm Prism Monocular, now adapted to most 35mm cameras. Gives F6.8 to F8. Less than 1/2 cost of lowest comparable power on market. Use separately as powerful viewing monocular! Our 4th year selling precision optical instruments. Mfrs. and importers. Write: DuMaurier Co., Dept. 35C, Elmira, N. Y.

REDHEADED WOODPECKER AUTHENTIC BIRD LAMP DISTINCTIVELY DIFFERENT

A bit of nature to brighten your home or business. A conversation piece. Life size woodpecker in realistic, natural colors, perched on natural wood stem. Lamp is 29" high.



ORDER NOW! \$15

MAKE IT YOURSELF

Complete kit—\$10 prepaid. All parts finished—ready for easy, enjoyable assembly.

BRUCE SPECIALTIES COMPANY
Box 305 Hartford, Wisconsin
Member: Milwaukee Association of Commerce

STOP SCRATCH -IT IS!

PROTECTS AGAINST:

6 Oz. Only 98¢
Ask your dealer

uncertainties of air transportation in Iceland (I didn't go to the Westmann Islands for that reason, but was detained both going to and coming from Akureyri because the plane was delayed on the Westmann Islands flight) as well as the fascinations of Mývatn.

Everything Dr. Pettingill said about the hospitality and friendliness of Icelanders I heartily second. One can always manage with English, but there were a few times in Mývatn and Akureyri when I wished that my acquaintance with the Icelandic dictionary and grammar and with the spoken language were a few weeks older.

MARGARET RUSK

Syracuse, New York

Sharing Audubon Magazine

The *Audubon Magazine* is so worth while and so interesting (I read it from cover to cover) that it is a shame for each copy to stop with just one person or family. I should like to suggest that others could multiply its usefulness, as I always do, by sending it, when they have finished reading it, to some school library which does not take it. Here it could be doing some real missionary work in conservation and love of nature. Consider carefully where you think it would not only do good but the most possible good.

MRS. CHARLES N. WATSON

Evanston, Illinois

Starling Ingenuity

During the cold, snowy days this winter here in northwest Missouri, I have been very interested in watching a pair of starlings. From my livingroom window, I can see the brick chimney on a neighbor's house. One very cold day, I noticed a pair of starlings perching on this chimney. At first I thought nothing of it. Then as time passed and every cold day the starlings would visit the chimney, I realized they were warming themselves from the heat that arose from the heating unit in the house. They

would turn themselves about from head to tail, as if they were standing by a stove. The center of the chimney being the warmest, the birds remained on that section of the chimney. I never saw any other birds doing this. Are starlings smarter than other birds? As the winter passed, other starlings came to warm on the chimney.

MRS. EMMA DAVIS

Weston, Missouri

Wants More Interest in Fungi

I have been an avid bird student for many years and quite interested in all natural history as well. About four years ago, while sitting on a log looking for late warblers, I noticed that my log had a fine growth of fungi. I decided to photograph it as the color was a deep reddish-orange. When my slides returned from the processors, I found this to be my best shot. Slide in hand I went to the public library to identify my rare prize. What a surprise! The library had little information on polypores and I found but little anywhere else. This experience launched me on a never-ending search for new fungi to photograph and new information. My polypore turned out to be *Polyporus cinnabarinus*, not rare but beautiful.

After several years of collecting fungi, my duplicate slides began to pile up. Hoping to trade some of these duplicates with other amateur mycologists, I joined the "People to People Hobbies Program." This is sort of a huge penpals organization with a foreign relations slant. I was soon placed on the Nature Committee, the chairman of which is Dr. Theodor Just, Chief Curator of Botany, Chicago Natural History Museum. At the same time I was asked to be chairman of the subcommittee on fungi. I am very much interested in extending my committee. Could there be any other readers of *Audubon Magazine* that might be interested in mushrooms? I would like to contact anyone active in any phase of fungi study, from professionals to the most amateur toadstool picker.

HARRY S. KNIGHTON

1721 Grandview Avenue
Portsmouth, Ohio

COMMENT

One of the best illustrated references (although expensive) we know of, for a special group of fungi—the mushrooms—is Alexander H. Smith's "Mushrooms in their Natural Habitats." Publishers are Sawyer's Incorporated, Portland, Oregon, 1950.

For a general book about fungi, we highly recommend, "The Molds and Man," by Clyde M. Christensen, University of Minnesota Press, 1951.—The Editor

Continued on page 188

INSIGNIA and DECORATIONS of U. S. ARMED FORCES W.W. II

Giant Revised Edition . . . 2,476 full-color illustrations

A remarkably researched and compiled book of all insignia, decorations, medals, service ribbons and badges of all our Armed Forces of World War II. Printed on quality paper, 298 pages, with texts and much detailed material. 2,476 brilliant, crisp full-color illustrations . . . exquisitely detailed beauty of all honor and bravery medals will thrill you. If you served in any branch of the U.S. Armed Forces during W.W. II you'll want this reference book on your bookshelf. You'll find it adds greatly when you discuss your service with your own child. Moderately priced due to a very large printing, only \$3.50 ppd.

WILLIAM HARDY, Box 547, Englewood City, New Jersey

When writing advertisers, please mention Audubon Magazine

AUDUBON MAGAZINE

The Tule Lake Threat Must Be Removed

EVERYWHERE the wild waterfowl of North America are under siege, falling back and failing in numbers before the pressures that destroy their nesting, resting, and feeding grounds. Farm drainage, having parched vast nesting areas in the Dakotas and Minnesota, is now reaching its withering fingers into Canadian prairies. Throughout the United States, in the name of "progress," our wetlands are shrinking before the ditching machines, the fill-trucks, and the bulldozers.

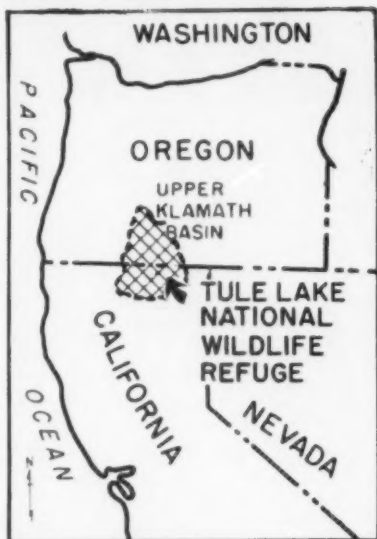
The expanded wetlands acquisition program of the U. S. Fish and Wildlife Service, made possible by the 1958 Act increasing the Duck Stamp and earmarking the revenues, comes very late. It is too late in many areas—the productive marshes are gone beyond restoration.

All this makes it doubly important for conservationists to stand firmly against any threatened invasion or encroachment upon the existing waterfowl sanctuary and refuge areas. Whether units of the federal system, or state areas, or sanctuaries maintained by the National Audubon Society or other non-government groups, these dedicated wildlife lands *must not be sold, bartered, or compromised away.*

Of all the areas in the refuge system operated by the U. S. Fish and Wildlife Service, none are more vital, nor more threatened, than the closely related refuges—Tule Lake, Lower Klamath, and Upper Klamath—which lie a few miles apart on the California-Oregon border.

How important is the Tule-Klamath area? So important that three-fourths of all the migrating ducks and geese in the Pacific Flyway spend some time there every year. Biologists have estimated as many as 7 million birds in the area at one time, most of them resting and feeding at Tule Lake, which is by far the most productive of the remaining marshes in the Upper Klamath Basin.

If the ducks didn't stop to feed at Tule Lake two or three weeks in early fall, the great flocks would be



Location map showing Tule Lake National Wildlife Refuge.

"dumped" into the rich agricultural valleys of central and southern California before the crops were harvested. The farmers would demand relief from depredations, and maintenance of Pacific Flyway waterfowl at present population levels would be impossible.

Moreover these refuges provide nesting grounds, although limited in area, equal in quality to the best in Canada and especially vital to two endangered species, the redhead and the ruddy duck.

Turn to next page

WORLD'S MOST ADVANCED

KERN SWISS BINOCULARS



• INTERNAL focusing! ALL the advantages of both center and individual focusing. No external movement. Watertight!

• Superb definition. Swiss precision construction.

• Perfect, balanced shape. Featherlight.

Focalpin models: 6 x 40 (20 oz.) \$169, 7 x 50 (30 oz.) \$199, 10 x 60 (37 oz.) \$229.

Conventional models: 6 x 24 (12 oz.) \$99, 8 x 30 (15 oz.) \$129, 12 x 50 (26 oz.) \$199. Cases included. Other models. POSTPAID.

Add 10% Federal tax.

Bartlett Hendricks

Pittsfield 50-A, Mass.
phone HI 7-9748

WHITE MOUNTAINS

ADULTS ONLY. A quiet, clean little place in the mountains with brooks, woods and trails to explore. Rates with Fine Food, \$52 to \$78. Private baths, cottages. Bkt. "A." MRS. KAUK, Prop. Tel. Rockwell 4-5230.

HILLTOP ACRES, WENTWORTH, N. H.

Scenic-Bird & Fishing Trips

CABIN CRUISER

Spoonbill

CAPT. ART EIFLER
P.O. Box 82, Everglades, Florida

NEW! FIELD GUIDE CARRIER

THE CONVENIENT WAY TO CARRY YOUR GUIDES FOR FAST REFERENCE!

- ★ Holds TWO Standard Size Field Guides
- ★ Handy Pencil Slot
- ★ Large Pocket for Lists and Field Notes
- ★ Easy to Open Gripper Snap Closure
- ★ Made of quality tan duPont FABRILITE



Protects valuable field guides from rain and soil! Attach it to your belt or carry it over your shoulder.

FIELD GUIDE CARRIER
only \$3.95 ppd.
Adjustable
Shoulder Strap
only \$1.00 ppd.



NEW! Peterson's FIELD GUIDE TO BIRD SONGS!
Two 12" LP records—over 300 songs—\$10.95 ppd.

OB Enterprises • Box 21 • Celina 5, Ohio

Inquire about special rates for Nature Clubs, Colleges and Bookstores

IDENTIFY BIRDS FASTER !!

Index your Peterson Guides with

BIRD GUIDE INDEX TABS

Easy to Install
Plastic Coated • Neat
Easy to Read

For Eastern, Western or
British Peterson Guides

Only 50¢ per set, ppd.

Protect your Peterson
Guides with Transparent

PLASTIC FIELD GUIDE JACKETS

Waterproof • Durable • Dirtproof

Only \$1.00 each ppd.

Moneyback Guarantee on all Products—Free Literature

Plan Now! Summer of 1960 in Connecticut

425 beautiful, wooded acres—including a wildflower sanctuary—are tucked away within 35 miles of metropolitan New York City, waiting to be explored by you.



Under the guidance of expert teacher-naturalists at the AUDUBON CAMP of CONNECTICUT a wonderful variety of plant and animal life will be revealed to you. Daily field trips to explore hemlock-lined ravines, rolling hills and meadows, nearby coastal beaches and salt marshes will give you an abundance of lively, outdoor experiences to share with others eager to learn more about the world in which we live. Audubon Camps are for those 18 years of age or more and interested in nature.

Quote: "I have come home with a head full of ideas which I hope to work out, not only with my school children but also with my fellow teachers—and in this way carry the Audubon message forward." Letter from Mrs. Esther S. Brodney, Connecticut 1959.

"Already the effects of our teacher have rubbed off on my two children and their friends in the neighborhood. We have had three safaris in woods and at a lovely stream." Mrs. James A. Harvey, Jr., Connecticut 1959.

MAIL TO

National Audubon Society
1130 Fifth Avenue, New York City 28, N. Y.

Please check your first and second choice

- ☐ July 17-July 30 General
☐ Aug. 7-Aug. 20 General
☐ Aug. 21-Sept. 3 General

\$105.00 for each two-week session

- ☐ Please send folder
☐ Please register me NOW
(Enclosed find \$20 for Registration fee.
Dates to be confirmed by letter.)

Name

Street and Zone

City State

Audubon Camp of Connecticut

Yet no federal refuge is more insecure than Tule Lake. It lies in an area of fertile volcanic soil that is highly productive of waterfowl foods. When drained and irrigated, these rich soils can also produce record yields of barley and certain other crops. The remaining lands of Tule Lake are greatly coveted by private interests for speculative and homesteading purposes, and therein lies the persistent danger.

The refuge exists only by sufferance of an executive order which superimposed it upon an earlier reclamation withdrawal. By the stroke of a pen in the hands of a future Secretary of the Interior, the refuge could be wiped out, reduced in size, or given away to homesteaders.

All or parts of Lower Klamath and Upper Klamath refuges are legally vulnerable in the same way, but their lands are not so coveted.

Under the steady pressure of the federal reclamation program and local irrigation interests, the original water and marsh area of Tule and Lower Klamath lakes has been reduced in the past 50 years from 187,000 acres to 25,000 acres. These same interests are still working relentlessly to bring about drainage, to divert water away from the refuges, and to get additional Tule Lake lands opened to homesteading.

At the moment this was written, the would-be homesteaders and land speculators, with a local "sportsmen's association" fronting for them, are advocating legislation that would "settle the controversy," but would settle it by leaving the door open for future homesteading.

Legislation is needed to place these vital areas on a secure basis. At the very minimum such legislation must accomplish the following:

1. Establish as permanent waterfowl refuges, under the sole jurisdiction of the U. S. Fish and Wildlife Service, the Tule Lake, Lower Klamath, and Upper Klamath refuges, and embracing all the lands now within their executive-order boundaries.

2. Make available for continued use a supply of water adequate to the waterfowl purposes of the refuges.

3. Provide that a fair proportion (perhaps 25 per cent) of the lease and rental revenue from agricultural operations and other economic by-

Come to Wisconsin in 1960

Have you ever walked on a bog . . . felt the earth sagging beneath your feet? Have you seen orchids—pink, white, or yellow—gleam in the half-light of mysterious woodlands?



The AUDUBON CAMP of WISCONSIN within the Hunt Hill Sanctuary gives you two weeks of exciting adventure such as these under the guidance of expert teacher-naturalists. The beautiful lake country of northwest Wisconsin with its fragrant woods, flowering meadows, and fascinating marshes is an ideal place to observe plants and animals in a variety of habitats. More than 10,000 campers from every state in the Union have attended Audubon Camps. Anyone interested in nature is welcome. Minimum age is 18.

Quote: "I am daily thrilled by the new doors of knowledge and pleasure that were opened for me at Hunt Hill. I hope to pass on the information to others." Mrs. Andrew Hobart, Wisconsin 1959.

MAIL TO

National Audubon Society
1130 Fifth Avenue, New York City 28, N. Y.

Please check your first and second choice

- ☐ July 17-July 30
☐ August 7-August 20
☐ August 21-September 3

\$105.00 for each two-week session

- ☐ Please send folder
☐ Please register me NOW
(Enclosed find \$20 for Registration fee.
Dates to be confirmed by letter.)

Name

Street and Zone

City State

Audubon Camp of Wisconsin



Aboard the LAZY BONES

200 miles through Florida's
Tropical Inland Waterways

Six Idyllic Days — \$95

For illustrated booklet write to
SHANTY BOAT CRUISES, INC.
P.O. Box 1628-A, Ft. Myers, Florida
Our Tenth Year

The Sea Surrounds Us
May 29 - Oct. 1

STRAITSMOUTH Rockport, INN Mass.

PRIVATE ROCKY POINT. Ocean on three
sides. Fresh & salt water birds. Sandy
beaches, unspoiled woodlands, marshes.
Compatible fellow guests. \$75-\$135
weekly including all meals. Spectacular
Dining Room overlooking sea.
Mrs. E. Wilkinson
1 Gap Head Road
Tel. Kingswood 6-3471.



Long Trail Lodge
at PICO PEAK, Rutland, Vermont
A Treasured Inn



Long Trail Lodge

Mountain Trails, Places of Scenic
and Historic Interest, Champlain
Festival 350 years, Trout Fish-
ing, National Archery Tourney,
Antiques, Birdlife catalogued 87
species by Maurice Broun of
Hawk Mountain.

products of these refuges be paid
over to the local counties for roads,
schools, and other tax-supported
services.

As long ago as 1951, John H.
Baker, then President of the Na-
tional Audubon Society, made a spe-
cial study of this problem at the re-
quest of the Secretary of the Interior,
at that time, Oscar L. Chapman. In a
detailed report to the Secretary dated
Dec. 1, 1951, Mr. Baker recom-
mended a solution along substan-
tially the same lines we now pro-
pose. Mr. Chapman's term in office
was soon to expire, however, and he
bequeathed the problem to his suc-
cessors.

It is amazing that a few hundred
individuals who stand to profit fi-
nancially have been able to prevail
against the interests of millions who
use and enjoy the waterfowl. Per-
haps it is because the friends of the
ducks are a big, silent majority,
while the emotional demands of the
private interests are both raucous
and constant.

Conservationists must speak up!

—CARL W. BUCHHEISTER

WANTED—CHECK-LISTS OF BIRDS

In a future issue of *Audubon Mag-
azine*, we plan to publish a list of
available regional, state, and local
check-lists, or annotated lists of birds
for the benefit of our readers. We
have had numerous queries from peo-
ple who travel long distances in their
bird-watching, asking us if local
check-lists of birds are available from
different parts of the country. If you,
or your birding group, have one
(either free or for sale), please send
a sample copy, the price, and to
whom our readers should write to get
a copy or copies. We plan to list
these, possibly with appropriate com-
ments about each, in a future issue
of *Audubon Magazine*. Please send
your check-list, on or before Septem-
ber 1, 1960, to John K. Terres, Ed-
itor, *Audubon Magazine*, 1130 Fifth
Avenue, New York 28, New York.

PATRONIZE

**AUDUBON MAGAZINE
ADVERTISERS**

When writing advertisers, please mention *Audubon Magazine*

LOOK

thru a roof prism

**HENSOLDT
WETZLAR**



Made in
West
Germany

SEE the difference!

A view so clear, so brilliant! That's due to
Hensoldt's roof-prism design and fine opti-
cal construction. Slender... Easy to hold...
Compact... Rugged. Magnifications of 7x,
8x, 10x, 16x. At leading dealers.

Write for leaflet.

CARL ZEISS, INC., 405 Fifth Ave., New York 17

Discover ...

Wild New Jersey

"AUDUBON WILDLIFE EXPEDITIONS"

from Chalfonte-Haddon Hall
in Atlantic City

Observe upland and shore
birds; waterfowl; rare plants
and flowers.

EXPLORE:

- 16,000 acre Brigantine National Wild-
life Refuge.
- The fabulous pine barrens.
- Coastal wildlife communities.
- The Society's famous Bennett's Bog
Wildlife Sanctuary.

Conducted by Vincent Abrattys, ornitholo-
gist, botanist, lecturer and author, experi-
enced tour leader, each Monday and Tues-
day during July and August. Illustrated
lecture Sunday evenings. Tours through-
out the year by advance reservation.

EXPEDITION FEES:

- \$15 per person for one day trip.
- \$25 per person for two day trip.
- \$10 and \$18 for guests of Chalfonte-
Haddon Hall.

For full details, write:

**WILDLIFE EXPEDITIONS DESK
CHALFONTE-HADDON HALL
Atlantic City, N. J.**



By Helen Hoover

The Flying

WHEN I was a very little girl, I believed that bats were mice that had wanted so much to fly they, in some wonderful way, had grown wings. I admired them greatly for this imaginary accomplishment and disturbed the field mice that nested in a nearby vacant lot by searching for a young mouse that might be in the process of growing wings.

My hometown in southern Ohio supplied excellent daytime resting places for bats—barns and belfries, lofts and unused attics, like the one atop our tall Victorian house. In spite of warnings that, if a bat entangled itself in my hair, I would have to have my head shaved, and that all bats swarmed with bedbugs and other unpleasant small biting things, I loved to go into the garden and watch them as they swooped soundlessly in the dusk.

Just why bats, which are completely harmless and enormously valuable in insect control, are often thought of as creatures of menace and ill-omen is a question. Perhaps they are vaguely connected with Old World superstitions of witches and vampires. There is, however, much that is wonderful and mysterious about them, and much that is not generally known, in spite of their large numbers and their occurrence on every major land mass except the polar regions.

The evolution of bats, their structure, and the specialization of some of them are all remarkable. The "hand" has been formed into the wing, with membrane extending from the elongated finger bones to

the forearm, side of the body and hind leg. The thumb remains free and is hooked for hanging. The membrane is composed of two layers of skin with nerves, hair follicles, blood vessels, sweat glands, and small bundles of muscle fiber in a thin layer of connective tissue between the skin layers. The wings vary in shape. Some, long and relatively narrow, are suited to distance flying; others are shorter and wider to give greater mobility. The inter-femoral membrane, which stretches between the hind legs, is strengthened by a cartilaginous support, the calcar, which extends from the inside of the foot a short way along or near the outer edge of the membrane. The ears are modified by an up-

right leaf-like structure, the tragus.

Although most bats eat insects and take their prey in flight, there are many diet variations, with accompanying adaptations of their mouths and digestive organs. Some bats eat fruit and small animals, and have both prominent canines and well-developed chewing teeth. Some subsist largely on flower nectar and pollen; their snouts and tongues are long, the latter sometimes equipped with a sort of brush, and the teeth are poorly developed. There is a Central American species which gaffs fish while flying and has enlarged and specialized hind feet.

The bat, although its metabolic rate is high, differs from other small mammals in that it is long-lived. Banded bats—little brown myotis, for example—have been recovered after 20 years in the wild. The bats' unusual ability to reduce their metabolic rate when resting and to speed it up

with activity may in some way explain this. They can also vary their body temperatures with outside temperatures. These adaptations for conserving energy at any time of the year seem to be unique; certain other warm-blooded animals can do so only during hibernation.

Some northern bats migrate, and those that hibernate must find caves, mines, or other sheltered places in which they are protected during near, or above, freezing temperatures. Not far from our present home in northern Minnesota, just south of the Canadian border and about 50 miles west of Lake Superior, numerous small bats (probably little brown myotis) emerged from crevices in a cliff beside a small lake each spring for several years. Winter temperatures had reached 50 degrees F. *below zero* but heavy snows had covered the cliff face and kept the bats snug. However, the

snows of the winter of 1957-1958 were unusually light and only a few bats could be seen there in the succeeding spring.

Again, bats differ from other small mammals in producing few young. Sometimes two to four young arrive, but births are often single and in most species only once a year. The gestation period is very long, considering the animal's size: from 50-60 days in the little brown myotis up to eight or nine months in large bats, and the length of the period may vary with metabolic changes, resting periods, and outside temperature variations. The young are large—the six-to-seven gram little brown myotis often produces a two-gram youngster. In bats that have several young, the individual weights of the young bats are less.

The mother bat gives birth to her young while hanging, head upward, supported by her thumbs. At birth,

← A Rafinesque bat from Tennessee. Note the aluminum band (similar to a bird band) clipped to the bat's forearm for its identification if recaptured. The ears of this bat have complicated flaps and folds that aid its sensitive hearing. Photograph by G. Ronald Austing.

↓ Hoary bat, largest of the so-called "tree" bats, and one of the migratory species. The two claws that appear at the top of the wings project from the bony wrists of bats. These clawed projections are its thumbs, and are useful in clinging to branches or to the walls of buildings and caves. Photograph by Charles E. Mohr.

Mammals

Bats in the summer dusk are an age-old mystery and a challenge to study their ways.





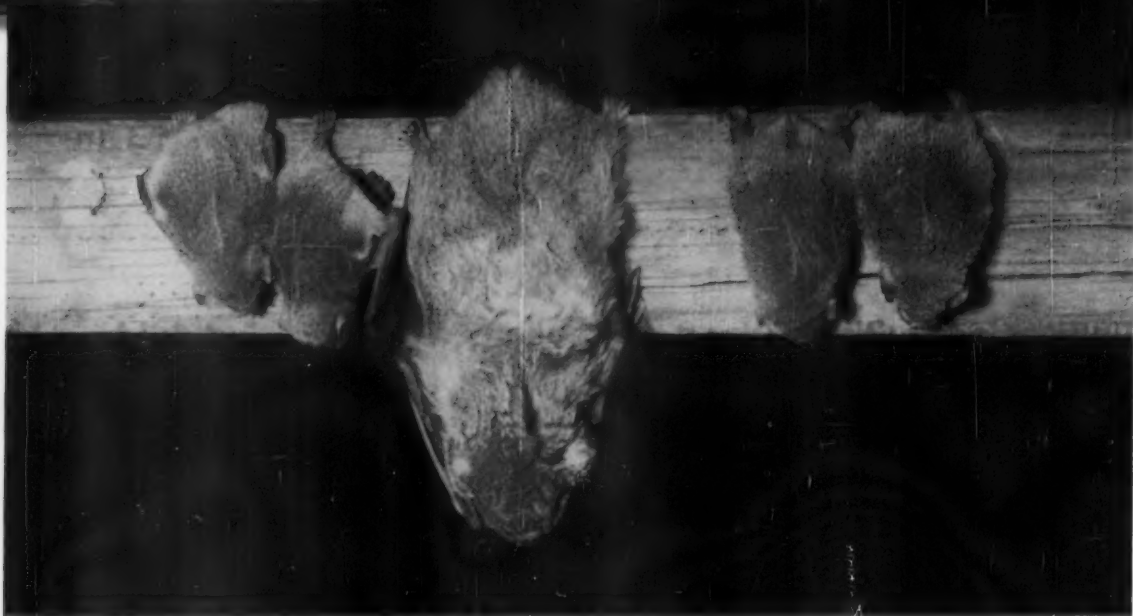
the newborn bat is caught in the interfemoral membrane of the mother, and it immediately climbs up her body to cling to the nipples. It clings tightly as it develops, and is carried by the mother even when she is flying about in her search for food. As the baby grows rapidly, the mother carries an astonishing burden. After the young are able to hang safely in their home loft or tree or other safe place—only a few days in some species and about two weeks in other—the mother hunts alone. At about three weeks, the young bat learns to fly and is ready to hunt for itself.

Individual bats catch hundreds of moths and other soft-bodied insects within a short time by echolocation, through which they fly about, avoid obstacles, and locate insects in flight. This is one of their most remarkable specializations. When flying they send out regular pulses of sound, which they speed up when an insect is detected. These supersonic vibrations are from 20,000 to 50,000 cycles per second, in the radio-frequency range above the limit of human hearing. The bat's sonar is effective

← The interfemoral membrane stretches between the legs; the bat's tail forms a ridge down the middle of it. When this membrane is curved forward by the bat, it forms a net or pocket with which it captures insects out of the air. Photograph of little brown bat by John H. Gerard.

↓ The wing membrane is very thin but contains a network of small blood vessels and nerves. A bat's wings are truly little but skin and bones, held together by a few small ligaments and tendons. Photograph by Allan D. Cruickshank.





Red bat (above) with four young rests with head downward, another habit for which bats are specialized with the hind feet rotated about 180 degrees from its position in other mammals. The claws of the hind feet are sharp and curved for clinging from twigs and wall crevices.

in highly noisy areas and a bat does not confuse its own pulses with those of other bats.

Echolocation is not just a crude device for hunting and preventing collisions but is far, far more efficient than man's best radar and sonar. It is so effective that bats can feed and avoid obstacles in complete darkness. They can distinguish objects by shape and can tell whether bars used as obstacles in experiments are vertically or horizontally placed.

They avoid close-spaced vertical bars because of their wingspread limitations but, by timing wingbeats, can pass between horizontal bars of close spacing.

This and their mobility in flight help bats to avoid animals that prey on them such as hawks and owls. Although they move awkwardly on the ground, dragging themselves by their wings because the hind legs are so specialized that they cannot bend forward, they can get into the air so

rapidly that they are seldom captured by other night hunters. Thus their deaths, unless caused by accident or exposure, are often due to old age.

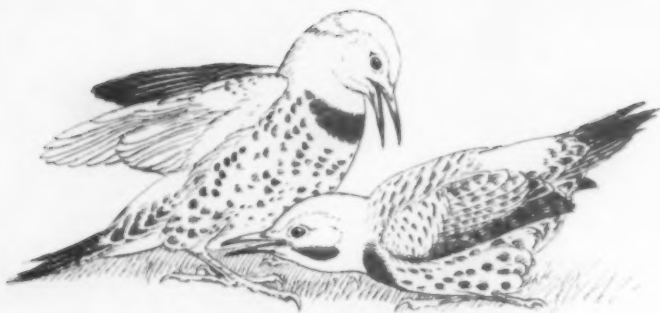
The little brown myotis is one of six widely-spread species of *Vespertilionidae* in Minnesota. It ranges northward from Florida, Texas, and the western deserts to the tundra and may be recognized by its color, small size, and medium ears, which reach to the nostril when laid forward.

The keen myotis is also small and brown, but has ears which extend one-sixteenth of an inch beyond the nose. It lives in the northeastern

Continued on page 178

Red bat in flight (below) carrying two babies. Photographs (upper and lower) by Leonard Lee Rue, III.





Adult yellow-shafted flicker (left) with young.

The lives of small wild things in the world about us have all the drama of "big game." From the daily journals of a naturalist come some of . . .

The Wonders I See

"He that hawks at larks and sparrows has no less sport than he that flies at nobler game."—John Locke



Slave-making red ants battle with black ants.

Illustrations by Walter Ferguson.

By John K. Terres

The Universal Language of Animals — A Gray Squirrel and a Starling

July 8. Little Neck, Long Island, New York. Partly cloudy and warm, but a comfortable breeze is blowing.

We have an old female gray squirrel that lives in and around our garden. She is the domineering head of the gray squirrel family that at present consists of three young squirrels that she bore in a hollow wild black cherry tree in my neighbor's yard to the north. Long ago I christened her "Cut-ear" for the ragged cut in her left ear. This morning, while I was lying on a chaise longue on the lawn reading the Sunday newspaper, Cut-ear came across the grass, leaped up to where I lay, and moved slowly along my side. I put down my newspaper carefully so as not to frighten her. She sniffed at the opening of one of my trouser pockets where I usually carry a few peanuts for the squirrels of our garden; then she crawled over my lap. She was searching for peanuts and was quite confident about it, without any air of boldness. Just as she walked over me, a starling flew to a lower branch of our white oak tree just above. For a moment it looked down at the squirrel and at me, and then it began to rasp out the starling's harsh "danger" call. This is a hoarse sound, as though someone were breathing laboredly, really more of a hiss than a cry. Starlings usually utter it in warning whenever they see an animal or a situation that spells "trouble" to them.

Instantly, at the starling's first warning, Cut-ear jerked upright and sat on her haunches. She looked up at the starling. She was trembling slightly, and her ears were pointed toward the bird as though to catch every sound it uttered. Her quivering alertness made me think of a terrier's intensity.

* Copyright 1960, by John K. Terres. Excerpts from the book, "The Wonders I See," to be published this fall by J. B. Lippincott Company. Illustrated by Walter W. Ferguson.

The starling kept up its rasping call, and Cut-ear leaped down from my lap to the ground, ran up our white oak tree for about six feet, and clung to the trunk, her tail jerking in excitement. She kept peering around the trunk and looking upward at the starling, as if she were asking the bird what it had seen to warn her that danger was near!

What astonished me was that Cut-ear minded, or had heeded, the starling. Apparently she had learned the starling's warning call, and that this cry meant "Danger! Beware!" Cut-ear knows the warning cries of other birds of our garden, too, for I have seen her heed the blue jay's, the robin's, the catbird's, and the grackle's. It drove home for me the constant need for disciplined, or mindful, behavior of wild animals if they are to survive.

Although there was no cat or dog in our yard, nor in sight anywhere, Cut-ear had acted promptly. Meanwhile the starling kept up its harsh calling and looked steadily at me! Possibly it was trying to warn Cut-ear that I was an enemy, and that she should get away from me quickly.

The starling might have been considered a foreigner in America, when it was introduced in Central Park, New York City, in the late 1800's, but our native gray squirrels must have long ago learned its speech. The warning calls of animals are probably a universal code, and it may be that it is the *tone* of excitement in a bird's warning call that is sufficient to alert a gray squirrel. Cut-ear had shown me that a healthy, or normal, squirrel needs to hear this—and nothing more—to send it scurrying up a tree to safety.

Slave-making Ants in Action

July 25. Little Neck, Long Island, New York. Clear, warm, and breezy—a lovely day.

When I walked out on our front sidewalk at two o'clock this afternoon, I could see by the dead and the dying that the battle had raged for hours. Red ants and black ants were still fighting each other fiercely on the sidewalk in front of our home. I saw a red ant, its jaws

gripped on the head of a black ant, drag it slowly across the concrete. Another had severed the head of a black ant, and carried the head about in its jaws; another had killed a black one and was bearing it bodily away. I saw at least a dozen of the slightly larger black ants lying dead on the walk where the red ones had killed them, but some of the red ants were dead, too. They had been killed by the big, black worker-ants in fierce defense of their colony.

Meanwhile, hundreds of the red ants streamed in and out of a small hole in the earth. Each, as it came out of the hole, carried in its pincer-like jaws a pale-brown cocoon of the black ants. The cocoons were borne away by the double file of moving red ants which traveled through the grass of our lawn and into our next-door neighbor's yard. I was watching a raid of a colony of red "slave-making" ants, *Formica subintegra*, on a colony of black ants, and it was the first time I had ever seen it in our garden.

For several years I had noticed that the big, common black ant, known to scientists as *Formica fusca*, had moved into our front lawn. There it had established two colonies, the entrances of which were holes the diameter of a lead pencil in the soil. They had not piled the excavated dirt high—and had made no large ant hills to mar the lawn. I noticed that these black ants were extremely nervous, and they ran swiftly down into their galleries below ground when I touched my fingers among them.

This black ant, which lives over the entire northern half of the United States and west to Alaska, is often a scavenger. Like the gulls and vultures among birds, it eats dead things—mostly dead earthworms, beetles, and other insects that it finds and carries into its underground colony to add to its food supplies.

Here in our garden, one of our colonies of black ants had been attacked by red ones, which really do not enslave the blacks, but *adopt* them. After the adult black ants have been killed or driven off, the red ants carry the cocoons, which contain the unborn young of the black ants, into their own colony. There the cocoons are cared for by the red ants and when the young black ants

"hatch," or emerge from them, they are raised as members of the red ant colony. Thereafter they share with the red worker ants in the duties of the colony. Apparently these black ants "think" they are members of the red ant colony for they will fight fiercely side by side with the red ants, even against their own kind.

Where were the red ants going? When I turned and followed them through the grass, I could easily mark their progress by the pale-brown cocoons that jerked about like small flags as they were held high in the jaws of the moving column of ants. I could see the column moving on beyond our neighbor's fence. Somewhere in his rock garden, it disappeared.

I walked into my neighbor's yard and soon found the entrance to their home. The moving column followed an open tunnel to a large sharp stone at the edge of the rock garden. There the ants disappeared under the stone. I knelt down to watch the seemingly endless army of them pass along the open tunnel at the rate of about 30 a minute. Each red ant carried a cocoon which meant that in an hour they carried 1,800 cocoons of the black ant into their colony. I measured the distance from the red ant colony to the entrance of the black colony they were robbing. It was 83 feet, and each ant must have traveled that distance several times during the afternoon and into the twilight of evening when the procession stopped.

Not all colonies of black ants defend their colonies as fiercely as ours had done. William Morton Wheeler, the great American authority on ants, once described near Rockford, Illinois, a raid by a colony of red ants on a species of black ant, noted for its timidity, all of which ran away and therefore escaped any casualties. However, as Wheeler pointed out, this was not typical, and large, strong colonies of black ants, instead of running away, may battle for hours or even days before the red slave-makers overcome them or drive them away.

I wanted to open up the nest of the red ants to see what they had done with the cocoons of the black ants, but darkness was coming on. On another day I would take the time to expose the nest, count the numbers of the red ant colony, and

see the "unborn" young ants that had been carried away.

How a Flicker Weans Its Young

August 4. Little Neck, Long Island, New York. Clear and cool.

2:30 p.m. I had been watching four flickers on our lawn, and now one of them—a young one—was acting strangely. There were two young ones, and two adults, a male and a female. They had been feeding over our grass during the last hour, and in watching the close association of the four, I was sure they were a family group.

Flickers are fond of ants (a government scientist counted more than 5,000 in the stomach contents of one of these big woodpeckers), and all were busy digging their beaks into ant hills on our lawn. I watched one of them open an ant hill by using its beak as a pick-ax, then shove its beak down into the hole. Apparently it was picking the ants out of their underground tunnel with its long, barbed tongue.

When I first saw them, the flickers were spaced about 15 feet apart, and when one of the young ones hopped across the grass to the side of the adult female, its strange actions began. At first, it had opened its beak as though it were uttering some slight sound which I could not hear; then it had hopped around in front of the female which had been digging steadily into an ant hill. The young one faced her, opened its mouth wide, and crouched low before her in the food-begging attitude of a young bird.

The female stopped digging and eyed the youngster hesitantly. Then she quickly thrust her beak down its throat, and apparently fed it some of the ants she had been gathering. When she withdrew her bill from the youngster's open mouth, she stood without moving.

At that moment, the youngster did an astonishing thing. It lowered its head, pointed its beak under the female's breast, and uttered a loud, rasping cry. It waddled forward and pushed its head and beak under the female's belly, all the while rasping its call louder and louder. Its insistent, prodding action plainly indicated that it wanted to be fed.

Its pushing was raising the female off her feet. Suddenly she began to peck vigorously downward on the younger bird's back, which continued to push under her. The more it pushed, the more the female pecked it. Finally the young one turned and waddled away; it seemed to understand that the female would not feed it. The parent did not pursue it, but stood watching it a moment. Then she returned to probing in the ant hill with her beak.

A little while later, I saw the other young flicker try the same tactics on the female. (I noticed that neither of the youngsters went near the male. Apparently the female had been doing most, if not all, of the feeding of these fledglings.) The female, when approached by the second youngster, at first fed it. When it, too, got impatient and tried to submarine under her, she pecked it so vigorously that it turned and hopped away.

I had never before seen behavior like this between a parent and young flicker, nor had I read of it. Apparently the repelling of the young by the parent flicker is part of their weaning. Just as a dog or a fox may refuse to nurse its grown pups, so had the flicker clearly shown her young ones that their "nursing" days were over.

"That Our Young Ones May Live"—Field Mouse, Jack Rabbit, and Cottontail

August 12. Trumansburg, New York. Partly cloudy with a strong breeze out of the southwest; a threat of rain in the air this morning.

Of all our human virtues, courage is the most admired. As we respect courage so highly in our fellow men, so we respect it in wild animals. It is not so much the courage of a trapped animal that I am thinking of, as that of an animal in defense of its young. Perhaps this kind of courage is to us the noblest; in the opinion of many naturalists, it is also the most touching.

This morning I drove into the yard of a young farmer in upstate New York who is a friend of mine. While I waited for him to return from the fields where he was working, I walked about his yard. Near the unpainted sheep barn, the young

man had piled cinder blocks with which he planned to build a garage. I could see that the blocks had been lying there for sometime, and I idly picked up one of them to see if a garter snake, a ring-necked snake, or some other small field creature might have taken refuge under it. When I lifted the cinder block, I saw a small ball of dried grasses and as I knelt down to examine it, a pungent odor came from it. I had uncovered the nest of a field mouse.

Carefully I opened the ball of grasses. In the center of it I found six tiny, hairless mice. I picked up three of the naked babies in my hands to examine their short muzzles, closed eyes, and small ears. One of them squeaked shrilly as I touched it. At that instant, a large field mouse, probably the mother, ran out of the tall grass beside me. I lowered my cupped hand, still holding the baby mice, until the back of my hand touched the ground. The mouse scurried to my hand, seized a baby in her mouth, turned, and ran away with it. I kept my hand close to the ground and waited. Soon the mother mouse returned, ran to my hand, and carried away a second young one. Within a few minutes she had carried away the baby mice, including the three I had left in the nest, all to some hiding place unknown to me—perhaps under the sheep barn close by. It was the most wonderful example of courage in a small animal that I had ever seen. I could have crushed her small body with one blow of my hand, but the field mouse, undaunted by my size, had only one concern—the safety of her family.

A few years ago, a man and his wife told me a remarkable story of mother love in a wild animal. In early June they were driving along a highway in Nebraska when they saw a marsh hawk flying nearby. The bird was coursing low over the prairie grasses and by the way it dipped and quartered, it seemed to be hunting. They stopped their car to watch. Suddenly the hawk swooped down into the grasses and disappeared. At that moment they were astonished to see a jack rabbit come bounding over the prairie toward the hawk, which was still on the ground. The jack rabbit came on at full speed. Just before it

Continued on page 166

"The Price of D.D.T."

"The accompanying photograph of a temporary exhibit in Cranbrook Institute of Science may be worth use in *Audubon Magazine*.

"The freezer unit, which is practically filled with bodies of birds collected locally under circumstances giving strongest presumptive evidence from D.D.T. poisoning, was first placed on display at the Cranbrook Institute of Science, Bloomfield Hills, Michigan, on the occasion of a visit from the National Shade Tree Conference. It has remained on display and is, of course, attracting quite a bit of attention.

"The freezer unit is covered with a sheet of clear plastic so that low temperatures are maintained."

ROBERT T. HATT, *Director*
Cranbrook Institute of Science

Photograph by Harvey Croze, Cranbrook Foundation.

Poisoned Birds in the Deep Freeze Exhibit

The freezer contains 144 birds of 53 species brought in to Mr. Walter P. Nickell at Cranbrook Institute of Science. About 50 per cent of these were brought in to us alive, exhibiting the typical symptoms of poisoning from chlorinated hydro-carbon insecticides. Most circumstances surrounding birds picked up gave no evidence as to the source of poison—whether from tree spraying, lawn treatment, or other source; but nine birds were brought in from one small garden in one day, about one week after elm tree spraying of the area.

The pair of adult robins and their nest of young, shown in the photograph, died in May 1959, a few hours after D.D.T. application to a large elm shading the nest.

The species represented, in order of number of specimens, are: robin (32), Baltimore oriole (7), starling

(7), English sparrow (6), five each of rose-breasted grosbeak, cedar waxwing, common grackle, hummingbird; four each of catbird, Swainson's thrush, blue jay, ovenbird; three each of screech owl, flicker, yellow-bellied sapsucker, goldfinch, magnolia warbler; two each of cardinal, indigo bunting, northern waterthrush, junco, saw-whet owl, red-shouldered hawk, brown thrasher; one each, marsh hawk, goshawk, sharp-shinned hawk, nighthawk, red-wing, red-bellied woodpecker, black-billed cuckoo, phoebe, alder flycatcher, purple martin, cowbird, Nashville warbler, pine warbler, Cape May warbler, yellow warbler, Canada warbler, golden-crowned kinglet, ruby-crowned kinglet, blue-gray gnatcatcher, tufted titmouse, hermit thrush, wood thrush, purple finch, song sparrow, white-throated sparrow, fox sparrow, chipping sparrow, Savannah sparrow, and swamp sparrow.





Bob Allen photographed during his search for the Canadian nesting grounds of the whooping crane, June 19, 1955. Photograph by Robert E. Stewart, courtesy U. S. Fish and Wildlife Service.

By John O'Reilly

When Robert P. Allen describes the whooping crane to an interested listener he uses more than words. His neck seems to lengthen and his eyes take on the cold, imperious stare of the whooper. With long steps he stalks about the room in emulation of the bird's dignified gait. He flaps his arms in the nuptial dance of the male crane. Stiff-legged, he leaps from the floor and throws back his head. Finally he strides away with eyes still staring and head moving back and forth in a jerking motion. I have seen him become so immersed in the impersonation that he walked right out of the room. He might well be a man turned into a bird except that this bird invariably has a cigar gripped in its mouth. Allen without a cigar would be like a pelican without a bill; an important feature would be missing from his face.

This ability to put himself in a bird's place is one of the many reasons why Allen, who retired on June 30, 1960, after 30 years with the National Audubon Society, has proved so thorough as a field research man. As the Society's Research Director, he has coupled enthusiasm with a tireless attention to detail. His field work and the subsequent voluminous reports on the roseate spoonbill, the whooping crane, and the flamingo are classic ecological and life history studies.

Bob Allen-

MAN WITH A MISSION

After 30 years of service to threatened species of birds, the Society's research expert retires.

Through his books* written in a more popular vein, he has placed the cause of threatened wildlife before a large public.

Allen's enthusiasm for things in the wild became evident in early boyhood and soon led him to pass every possible hour in the woods of his native Pennsylvania. He was born in South Williamsport, Lycoming County, on April 24, 1905. As in the case of many boys of that era he was deeply influenced by that wonderful book of the outdoors, "Two Little Savages," by Ernest Thompson Seton. It became his Bible and he sought to relive everything in the book.

This overpowering devotion to

* We hope that everyone of our readers has read, or will read, Bob Allen's book, "On the Trail of Vanishing Birds." Published in 1957 by McGraw-Hill Book Co., it is a splendid autobiographical story of which a reviewer in *Audubon Magazine* wrote, "A more thrilling and entertaining tale would be hard to find." —The Editor

An Appraisal of Robert P. Allen

No obstacle or hurdle was ever too great for Robert P. Allen to overcome or get over. He tackled a project with enthusiasm, determination, perseverance, and zest. He solved his own problems and never laid them in his boss's lap. He got things done. No 9 a.m. to 5 p.m. lad here; just consistent overtime work without overtime pay, and gladly. His wife Evelyn entered into the life of pioneer, frontier communities without whimper or complaint as to hardships. She made her family a beloved and respected element in each such community; this was of immense value in furthering the success of Allen's work and the objectives of the Society. The Allens are the kind of people that have made America great.

JOHN H. BAKER
President Emeritus

wild things and to the outdoors still gripped him when he reported for work at the National Audubon Society in September, 1930. Nor was it diminished when they named him librarian and set him up in a cubbyhole in the Society's headquarters, which was then a small suite of rooms over a funeral parlor on Broadway in New York City.

His first task was assembling and cataloguing the library that Dr. T. Gilbert Pearson, then President of the Society, had collected. Allen had never worn an office well, but he stuck to the books. A form of relief came in 1931 when Dr. Pearson sent him to Philadelphia to sell the idea of slides and lectures in schools. He was giving talks to school children when, in May of that year, he received a telegram from Dr. Pearson ordering him to make a field survey of the Maine coast. It was like ordering a duck back into the pond. He landed on 77 islands and rocks where herring gulls were nesting and he found the first nest of the great black-backed gull ever reported in the United States.

Meanwhile the Society had moved to 1775 Broadway and had set up a new department of sanctuaries with Ernest G. Holt as its director. Allen still bore the title of librarian but assisted Holt and made some field trips. These were welcome interludes between stretches of office work. But in 1933 Allen was on the point of leaving the Society. The Board of Directors had held that he looked too young to become Sanctuary Director. However, instead of leaving, he grew a mustache. The facial adornment apparently added years to his appearance, for in 1934 he was appointed Sanctuary Director. In his new post he was in charge of a warden force of about 25 men.

In 1934 Dr. Pearson became President Emeritus, Kermit Roosevelt, President, and John H. Baker, Executive Director. The Society moved into the building at 1000 Fifth Avenue in October 1938. From 1936 through 1938, Allen carried on lengthy studies of the black-crowned night heron in addition to his work at the office. He lived out on Long Island, where he would rise at 4:00 a.m. and ride a bicycle through the pre-dawn gloom to reach the heronries. By special arrangement, he arrived at the office one hour late each morning.

New problems of the Society kept arising in the field. The nesting colony of spoonbills had not been found in Florida Bay. The California condor and ivory-billed woodpecker studies had been set up and the Society was playing an ever greater role in helping to save threatened species. In October 1939, Allen gave up his job as Sanctuary

Director to take over the spoonbill study. Soon, the Allen family was living in a trailer on the southern end of Key Largo, a place that lacked the living facilities it has today.

For long periods, Allen, with his customary thoroughness, conducted his investigations by living a hermit's life on a mangrove key where the spoonbills nested. His report on the spoonbills was published in 1942. The war came along and Allen was soon in the Army, serving as a mate on an Army mine-planter.

By 1944, conservationists and ornithologists were so aroused over the whooping crane's plight that they strongly recommended that "the Fish and Wildlife Service and the National Audubon Society should take immediate steps to learn the exact status of this species throughout its range and institute practical mea-

sures to forestall its extinction." [See *The Auk*, October 1944 issue. — Editor]

A small band of these big birds, the sole remnant of a great race, wintered on the Texas coast and disappeared each year to their then undiscovered breeding grounds in northern Canada. In time the whooping crane project, with the U. S. Fish and Wildlife Service, the Canadian Wildlife Service, and the National Audubon Society participating, was set up. Allen came out of the Army in 1946 and Baker immediately turned the whooper project over to him.

This started an adventurous three years for Allen. He stored his furniture in Florida and, with his family, moved to the Aransas National Wildlife Refuge in Texas to be with the cranes. There he lived with the

Bob Allen (right) with Henry Bennett, former Audubon warden, Corkscrew Swamp Sanctuary, Florida. Photograph by Charles Lee Barron, courtesy Florida News Bureau.



birds on the lonely coastal marshes. Later he penetrated the wild country of Canada's Wood Buffalo Park to investigate their nesting grounds. His greatest moment came when the light plane in which he was flying circled over a round lake. On a small island in the lake was a pair of whoopers with two young. A mother bear and her two cubs scampered across the bed of a dry pond nearby and through another pond on the other side of the lake floundered a bull moose. No scene could be closer to the Allen idea of things as they should be.

Beginning in Yucatan in 1950, Allen devoted another three years to a study of the American flamingo. Most of his work on this project was done in the Bahamas and the West Indies. In all, he made 24 flights out of Miami on the flamingo project.

Allen's enthusiasm for his birds is infectious. Wherever he goes, local residents become intensely interested in his work and the problems of the species he is studying. In the small town of Austwell, Texas, the nearest community to the refuge where he was studying the whoopers, a group of townsmen formed a loosely-knit organization called the Austwell Science Club. It met frequently at the combination gasoline station and beer parlor which was the center of

community life. There the members sat around discussing scientific subjects far into the night, and most of the topics dealt with the whooping cranes.

Allen was received in much the same manner at Fort Smith, the little community in Canada's Northwest Territories where he made his base. To the people in both places, here was a visitor who had no ax to grind other than the cause of some threatened birds. He wasn't in it for money and didn't preach to them. But through his jovial manner they could detect his sincere concern for the birds and they pitched in to help him as best they could.

And don't think all this will end with Allen's retirement. During his years in the field, he suffered many hardships and has had to conquer various illnesses, including tularaemia. He feels that he ought to slow down. Under the plans for his retirement, he will still ride herd on the roseate spoonbills in Florida Bay. He will still take a hand in the flamingo project. He has magazine articles and another book to write. His close friends have a deep suspicion that he will be busier after retirement than he was before. The only outward sign of relaxation is that he has recently taken up fishing. He deserves the best of luck.

—THE END

THE WONDERS I SEE—Continued from page 162

reached the hawk, the bird arose into the air. It was carrying in its talons a baby jack rabbit and was so heavily laden with its prey that it found it difficult to get more than a few feet above the ground. The adult jack rabbit—possibly the mother—ran along just beneath the marsh hawk, seeming to dare it to come down within kicking reach of its big back feet.

When the marsh hawk had finally risen to about 60 to 80 feet above the ground, a large Swainson's hawk arrived and dived at it in an attempt to make it drop its prey. After a short swirling pursuit, watched by the jack rabbit, the marsh hawk dropped the rabbit. The adult ran swiftly to the body of its young one and stood over it. Both hawks returned again and again but they did not attack the adult jack rabbit. Finally they both flew away. When the man and his wife last saw the jack rabbit, it was still standing guard over the inert body of its young one.

Recently a woman in Wisconsin wrote to me and said she had seen a crow swoop down and try to pick up a young cottontail rabbit from the ground. The mother cottontail was nearby and ran swiftly at the crow, causing it to fly. Several times the crow came back and tried to catch the young rabbit, but each time the mother cottontail darted at it until it flew away.

I know of other true accounts of the bravery of wild animals in defense of their young that have ended successfully. In my records are accounts of a hare that fought off a weasel which was trying to get at her young, and of cottontail rabbits that defended their litters against blacksnakes, which will eat young cottontails if they can catch them.

The field mouse, the jack rabbit, and the cottontail—all were defending their young ones against certain death. Whether they did it through instinct or devotion does not matter so much as the achievement itself, and the willingness of the parents to sacrifice themselves so that their young ones might live. —THE END

Bob Allen when first employed by the National Audubon Society.



Bob Allen today. Photographs from National Audubon Society files.





THE PRESIDENT REPORTS TO YOU

By Carl W. Buchheister, *President of the National Audubon Society*

Eisenhower Acts to Save Key Largo Coral Reef

A new kind of national nature sanctuary came into being when President Eisenhower, in an executive order of April 15, 1960, established the Key Largo Coral Reef Preserve, withdrawing from any kind of exploitation or despoliation a portion of the only living coral reef on the North American continent.

The new preserve is about 21 miles long and 4 miles wide. Part of it lies within Florida's three-mile offshore limit and will be protected by the State Board of Parks under an order signed by Governor LeRoy Collins and other state officials. Action by the President of the United States was required to preserve the portion lying outside the three-mile line.

A movement to create such an aquatic park was started when it became apparent that commercial operators and skin-diving souvenir hunters were beginning to destroy the reef by dredging, dynamiting, and picking it to pieces.

Readily visible from the surface in the clear, shallow waters, the new preserve not only is an area of fantastic beauty but provides habitats and shelter for innumerable marine animals. We have written to President Eisenhower commending him for acting to save this unique and beautiful formation for the scientific study and esthetic enjoyment of future generations.

C. & O. Canal Park Reversal

Conservationists suffered a serious defeat May 19 when the House of Representatives in Washington shelved a bill designed to establish a Chesapeake & Ohio Canal National Historical Park. The blow fell in the form of a 227-to-134 negative roll-call vote. Desirable natural resource measures have been bottled up in committee or otherwise stymied, but this was the first such conservation setback in a record vote in either the House or Senate for several years.

Situated along the banks of the Potomac River for a distance of 165 miles from Cumberland, Maryland, to Washington, D. C., the proposed park would be within 150 miles of nearly 20 million residents of population centers in Virginia, Maryland, the District of Columbia, and neighboring states. The historic canal, once a vital link in the nation's commerce, was the culmination of a project actually started by George Washington. Now the old canal and towpath, long unused for shipping but substantially preserved, form one of the most picturesque riverside trails in the country as it winds through and out of the scenic Alleghenies. Partly owned by the National Park Service now, it already attracts tens of thousands of visitors annually. These facts were pointed out by Congressman Richard Bolling of Missouri and others who supported the bill.

The opponents centered their verbal fire on the cost

of the additional land that would have to be acquired to round out the park and protect the canal. It was apparent in the debate, however, that plans of the Army Engineers to build a big dam on the Potomac was a major factor in defeat of the bill. A dam would cost far more than the park, but certain groups, principally public power interests, have opposed the bill because they fear that establishment of the park would make it more difficult in the future to get appropriations for the Engineers' proposed "Riverbend Dam."

Conservationists in the National Capital area have campaigned valiantly for the park, but they can't win the battle by themselves. As the local groups rally to resume the fight, the rest of the country will have to come to their aid. Your Society pledges its support.

[EDITOR'S NOTE: After this editorial was in type the Senate passed a bill that would authorize a C. & O. Canal Park smaller in area than the original proposal. This revived hopes the House might reverse itself before Congress adjourned and approve the "half-loaf" measure.]

The Easy Way Out Isn't Always the Best

Last autumn the U. S. Navy decided that to reduce the hazard of albatross-aircraft collisions at its Midway Island airbases, it would have to slaughter all the "gooney" birds on one or two of the islands. National Audubon Society leaders and others protested. Then at the suggestion of U. S. Fish and Wildlife Service biologists, who understand birds as well as the Navy understands airplanes, the Navy tried leveling the sand dunes adjacent to the runways. This experiment was based on the theory that the dunes contributed to air currents that attracted the soaring birds.

One month after the dune-leveling had been completed, Biologist Chandler Robbins reported the number of soaring birds was down 95 per cent over the most-used, east-west runway on Sand Island. On another runway, where erosion problems prevented as much dune-leveling, the decrease was not so marked. Overall, the number of collisions had been reduced 67 per cent.

Service biologists emphasized this was only a preliminary report. Longer observations will be needed to draw firm conclusions. The early evidence is sufficient, however, to reaffirm a conclusion reached long ago by this Society: That in "bird nuisance" problems, the obvious or easy way out—killing off the birds—is rarely if ever necessary, and seldom solves the problem.

Bob Allen Hangs Up His Binoculars, But Not Out of Reach

To say that "words cannot express" is trite but true when I undertake to write something fitting about the retirement of Bob Allen who, after 30 years of service, has chosen to relinquish the title and responsibilities of Research Director of the National Audubon Society.

Continued on page 188

When an adult bird feeds the young of another

species, it is tempting to call it

A "Good Samaritan"

Photographs by the author.

By H. H. Pittman*

A PORTION of the prairie of southeastern Saskatchewan is partially wooded: not forested in any sense of the word, but liberally sprinkled with little thickets which, in places, are so numerous that an observer seems ringed by trees. From the air in autumn these look like green oases in a golden-brown sea. The trees are always poplars so that to the casual traveler passing by rapidly the scenery soon becomes monotonous and even uninteresting.

Only one who lives here or travels slowly perceives the beauty of these scattered tree groups or realizes that each little wood has its own individuality. Often they surround small depressions holding snow-water for a few months in which willows of various kinds grow rankly and they generally have patches of silvery wolf-willows on one side which, in turn, may give way to short snow-berry bushes—the "badger willows" of the early settlers. They are all interesting to a naturalist and worth investigating for they afford shelter to much of the wildlife of the prairie and are the homes of many wildflowers.

I once placed a blind in a recess in one of these thickets to get some pictures of a pair of clay-colored sparrows at their nest in a snow-berry bush. I watched these active little birds for hours at very close quarters. The young ones were about four or five days old and both parents were so busy that my photographic work was simple. The weather was very hot on the second

day and I was half asleep when I suddenly awakened to the fact that there was a male yellow warbler at the nest. Too surprised to release the camera shutter, I saw him study the widely-opened mouths confronting him, quietly wait until they all subsided, and then flit away. Only then did I realize what a wonderful opportunity for an unusual photograph I had missed.

Fortunately the warbler returned several times during the afternoon and I was able to get a picture of him feeding the young ones from the same perch their parents frequently used. The food he brought was too small to be identified and seemed more suitable to newly-hatched chicks than to the lusty young sparrows which by this time were well able to handle quite large caterpillars. During his last visit to the nest of the clay-colored sparrows, one of the parents returned and a fight ensued in mid-air. The encounter was brief but well worth watching for the excited yellow warbler with every feather erect looked like a ball of yellow flame. I found later that the warblers had a nest a few feet away with four eggs on the point of hatching.

These seemingly cooperative, or "kindly" actions on the part of wild birds have been reported before although photographic evidence is uncommon. Caged birds will sometimes feed and even adopt young ones of another species but the conditions in such cases are artificial and do little beyond showing that such things can occur. Among wild birds we would naturally expect the females to be most likely to show an interest in strange chicks although

I have known a male Baltimore Oriole to respond to the calls of a young red-winged blackbird. Birds, of course, are individuals and it would be very easy to credit this particular yellow warbler with a kindly and charitable disposition but it is generally a mistake to attribute human qualities to them. While admitting varying degrees of intelligence in birds, the actions briefly recorded here may have to be explained in another way, more prosaic but probably truer.

Many wild creatures, and particularly birds, are somewhat clocklike in their actions and reactions and once they are wound up they have to do certain things. This procedure is the result of countless experiments spread over thousands or even millions of years and generally enables them to conform to the situations they are most likely to meet. However, to continue the simile, occasionally a cog slips with interesting results. This warbler, keyed up to feed newly-hatched chicks, had the trigger released when he found some young birds close at hand. Bound by age-old lessons or constitutional obligations, he had to follow the rules. We cannot say that his actions indicated either reasoning or intelligence because the chicks he fed were not hungry and the food he brought was not suited to their stage of development.

The yellow warblers had chicks of their own the following day and I was soon able to get some pictures. If his partner had noticed his indiscretions, I don't think she mentioned them, and his behavior with his own family appeared to be all that could be desired. —THE END

* Harold Herbert Pittman was born in England and educated there. He now lives in Saskatchewan and for years has been enchanted by the prairie country.—The Editor

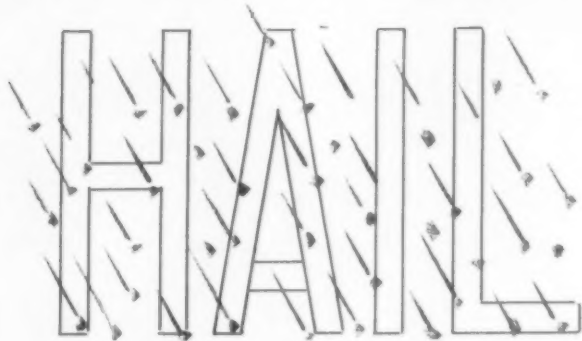


Clay-colored sparrow (above) at its nest and young ones.

A yellow warbler (below) visits the young of the clay-colored sparrow.



Can natural forces ever be tamed to avert disaster to waterfowl? A government biologist uses an opportunity to measure the terrible effects of



GREAT DESTROYER OF WILDLIFE

By Allen G. Smith*

ACROSS the North American continent, many forces, both man-made and natural, annually contrive to reduce our waterfowl populations. Man is usually considered to be the greatest single factor accounting for the yearly reduction of our waterfowl, either through hunting or the destruction or modification of waterfowl habitat. It is a difficult task to evaluate our role in this problem because of the many interrelated factors inherent in the ecology of any wildlife species. If, however, we set aside human influences and consider only the natural causes of waterfowl population reduction, we are frequently able to measure their force more accurately. This is especially true when something like disease, oil pollution, or hail strikes a limited area with a known waterfowl population.

For centuries, hailstorms have swept across areas of thunderstorm activity on this continent. Fortunately, for all concerned, these storms frequently dissipate before extending over too great an area, or they are not severe enough or in the right locations to cause heavy property damage. On the prairies of our mid-continent, damage is usually confined to the flattening of gardens and grain crops or the destruction of greenhouses. Occasionally very severe storms do occur, accompanied

by high winds and hailstones of very destructive size. Assessments of damage caused by these storms are customarily made in reference to the destruction of man's real and personal property. Seldom has it been possible to make observations of the effects of these storms on our wildlife resources.

Since 1947, the Bureau of Sport Fisheries and Wildlife of the U. S. Fish and Wildlife Service in cooperation with the Canadian Wildlife Service and the respective Provincial Game Branches have been conducting annual surveys of the important waterfowl breeding grounds of Canada. These surveys are conducted by trained biologists who act as both aerial and ground crews. The population and production data which these crews gather provide invaluable information needed by the federal governments of Canada, the United States, and Mexico in the management of our waterfowl resources.

Alberta is one of the Canadian provinces so surveyed each year. It also happens that this province, because of the proximity of the Rocky Mountains to its prairies, has a greater incidence of hailstorms than does any other Canadian waterfowl-producing area. This fact, plus the presence of the waterfowl survey teams resident in the field from May 1 to August 1, provides an excellent opportunity for a study of the effects of hailstorms on waterfowl.

Atmospheric conditions change

radically from month to month, and from day to day. Some years are nearly hail free, whereas others, such as 1953 and 1954, are classed as "hail years." Two storms, one on July 14, 1953, and another on July 18 of the same year, were particularly severe and widespread. The area covered by each storm had been aerially censused to obtain waterfowl population indices, and the earlier of the two storms obliged further by crossing one of our intensive ground study areas where a detailed investigation had been made which included an accurate census of all waterfowl, by species, sex, and age (adult or juvenile). More perfect conditions for the study of the effects of hailstorms on waterfowl populations could hardly have been devised.

Shortly after noon on July 14, 1953, an extremely severe hailstorm originating a few miles southwest of Delburne, Alberta, beat a path northeasterly to the North Saskatchewan River, 140 miles away. The most destructive path of this storm, where damage to crops was judged by the Hail Insurance Board to be 100 per cent, was five miles in width. One hundred and forty miles by five miles in area—700 square miles of terrible destruction! The storm was accompanied by winds which at times reached 75 miles per hour, and it deposited hailstones slightly larger than golf balls. The damage caused by such a natural phenomenon is hard to believe in terms of flattened grain crops, mangled trees, battered buildings, and the losses of livestock and wildlife.

From the air, the track of this hailstorm could be seen for miles. Within 48 hours after the storm the sun had bleached the shredded vegetation and a golden-yellow band, extending to the horizon, marked the passing of the storm. The emerald green of growing wheat and aspen bluffs, outside of the storm area, provided a colorful contrast to the yellowing plant debris.

A close investigation of the hail damage on the ground presented a picture of unbelievable devastation. Grasses and herbs were shredded beyond recognition and beaten into the earth. Trees and shrubs were stripped of all leaves and small branches and the bark on one side of the larger trees had been torn away or deeply gouged by hail-

* Research Biologist, Denver Wildlife Research Center Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service, Brigham City, Utah.

stones. Plants growing in waters of the potholes and lakes were reduced to nondescript pulp. Emergent vegetation had disappeared, destroyed and beaten under the water's surface by the weight of the hail. Ponds that had been choked with grasses, sedges, cattails, and bulrush since June, were stripped of all evidence of former plant growth. The waters of these ponds became extremely turbid as a result of the violent flailing action of the hail upon shallow water areas.

Farmers in the path of this storm suffered great damage from broken windows and battered roofs, autos, and farm equipment, to say nothing of the loss of poultry and other small livestock. On the waterfowl study area already referred to, one farmer lost a 600-pound hog before it could seek shelter.

Songbirds, hawks, owls, crows, grouse, coots, grebes, ducks, and geese were wiped out impartially. In fact, every exposed bird and small mammal was killed in a matter of minutes. Adult ducks of all species, divers and puddlers, as well as their young, littered the surfaces of the potholes and lakes in the path of this storm. By the following day, waterfowl lay in rows on the shores of the ponds, entangled in the plant debris which had been swept ashore by the wind.

When hailstorms of moderate intensity strike a pothole with dense edge and emergent vegetation, waterfowl can usually find sufficient cover to escape serious harm. But in this storm, even lush, five-foot stands of cattails were reduced to battered stubs. In one such cattail stand, well-hidden under the live and dead stems of these plants, was a scaup nest which was to have hatched in about 48 hours. After the storm, no upright vegetation remained, and, though the nest was covered by the female when she left, hail had beaten down the surrounding plant growth, exposing the eggs and destroying them. The well-incubated eggs, protected in part by the surrounding vegetation and nest cover, was sufficient to prevent them from being completely destroyed. Instead, they were shattered and crushed, exposing the mutilated, fully-developed duck embryos that were near to hatching.

Many ducks, both adults and

young, were examined after the storm in order to learn the physical effects of the hail on the bodies of these birds. Death was caused by a crushing of the skull and massive contusions on the backs of both adults and young. One interesting but gory aspect of these dead birds was the fact that, repeatedly, one found the upper mandible torn from the adult ducks, leaving only the lower mandible and the exposed tongue. Apparently, when ducks were struck on the head, crushing the skull and tearing away the upper mandible, death was instantaneous and other contusions were of minor nature, possibly because of the limp attitude of the duck. However, if the blows came on the back before they occurred on the head, injury to the body was more severe. It is possible that death caused by severe blows on the back would cause a duck to drop its head into the water, thus protecting the head from further harm. This is, perhaps, a minor point, but damage to all dead birds, adult and juvenile, seems to have been of either one type or another, but usually not both. Only an occasional bird was found with a broken wing, which may indicate that the severity of the storm was too great to allow them to try to escape by flying. The fact that the storm occurred during the period of adult moult, meant that many adults as well as most young were not well-protected by feathers. Thus, birds were frequently found that had been scalped and had the skin torn from their backs.

So much for the actual physical effects of hail on ducks. Of even greater interest were the over-all effects of these storms on known waterfowl populations. Let us consider again the July 14, 1953 hailstorm. The aerial "highways" above the area which we traveled to measure waterfowl populations crossed the path of this storm at 10 different locations. These are flown twice each summer, once in May to census waterfowl breeding populations, and again in July to measure their production. From these aerial surveys in 1953, we were able to measure the total loss of waterfowl from one hailstorm. In May, these aerial surveys produced a waterfowl population index for the parklands of 16.4 pairs or 32.8 ducks per square mile.

Therefore, in May 1953, a minimum of 11,500 pairs or 23,000 ducks were resident *within the area devastated by hail on July 14*. When the second aerial survey was conducted early in July, the same area netted a brood index of 3.3 broods per square mile with an average of 5.7 ducklings per brood. Thus, at least 2,310 broods, or an additional population of about 13,190 ducklings, were present at the time of the storm. If we add the adults in May (23,000) to the young in July (13,190), the total loss is some 36,190 waterfowl! This is exclusive of coots which are also a very plentiful species in Alberta's parklands.

The figure of 36,000 is thought to represent a minimum loss figure for this single storm for several reasons. First, the storm path, though it was seldom less than five miles in width, was frequently wider than that. Second, it is a well-known fact that visibility factors reduce our accuracy of observation in the parklands by an appreciable degree. Actual populations are known to be as much as twice the index figure obtained by an aerial census of ducks in the parklands. Third, and equally important, is the fact that in July a great proportion of all male ducks usually leave their females and assemble in large lakes in moulting concentrations, leaving only the females with their broods. Though this ordinarily removes half of the adult population, several very important moulting areas happened to be in the path of this storm—lakes such as Buffalo, Wavy, Thomas, and scores of others too small to be named but too large to be classed as potholes. Thus, we found that all ages and species and both sexes of waterfowl were destroyed with impartiality. It is felt, therefore, that an estimate of 36,000 dead ducks resulting from this single storm is very conservative.

Though no effort will be made to describe the second severe storm which struck the central prairies on July 18, 1953, we were again able to assess the damage caused by it. In this case, within an area of 260 square miles, some 23,000 adults and 4,000 young ducks were destroyed. Thus, in less than a week, a minimum of 60,000 ducks were wiped out by these two storms in one segment

Continued on page 189

OWLS

Emblems of the Night

← Screech owl, one of the most nocturnal of all owls, photographed by
Allan D. Cruickshank.



By Peter Farb

ONE night a few years ago when my car broke down in the gloom of a Virginia swamp, I took out my red warning-flashlight from the trunk and waited for help to arrive. Then I remembered that most night creatures are practically insensitive to red light. Here was an opportunity to break the bonds of my electrified world and watch the drama of the night unseen.

I played my flashlight through the deep forest and in the red-hued mist saw a wonder world of hopping, crawling, running life. My light flicked past a rabbit. Suddenly, I felt an eerie draft of air and in an

instant a great horned owl was on the animal, enfolding it in its wings. I had not heard a sound as the owl swept past me. With grim precision, it had captured prey I could not have seen without my light.

Owls, rightly known as "lords of the night," possess some of the most marvelous gifts of animal structure to be found. Their life habits and forms have developed in response to the fact that they must live successfully in the pitch of night. They must seek out and capture the most rapidly darting prey, avoid tree branches and other obstacles, attract a mate—all in a world of so little

light that human eyes would be practically useless.

To do these things, the owl is endowed with specialized night equipment. It is one of the few silent birds in flight. With eyesight 100 times as acute as human eyesight, it can detect the faintest glimmer of light. (At least one kind of owl can capture prey where the light is the equivalent of that thrown by an ordinary candle burning 2,582 feet away!) Its hearing is so sharp that it can even pinpoint its prey in complete darkness. Its powerful claws are set at hair-trigger and are able to clinch automatically on prey it

Great horned owl in flight. Photographed by G. Ronald Austing.



can feel, but is unable to see.

But the superstitions! Around the globe, this amazing creature, because it is hinged to the unexplored world of darkness, is feared and misunderstood. People of many nations depict owls as attendants on sorcer-

ers and hobgoblins; its very presence is regarded as a certain sign of tragedy. And actually, the owl is every bit as amazing as the folklore it has inspired. It is true that owls often inhabit abandoned houses and dark church belfries, in lieu of the hol-

Great gray owl photographed by William H. Carrick of Toronto, Canada.



low trees of our once great virgin forests. Like shy outcasts, outrageously hunted by man, they have found refuge there. They have been known to glow with a phosphorescence as they swoop through gloom like ghosts; that is because the rotting wood of their nest holes may be coated with luminescent fungi which rubs off on the birds' feathers. And the wise old owl is heavy with age; one captive lived for 68 years, a record among birds, and there is even the report of one reaching 100!

Owls are among the most successful creatures in feathers. They have colonized all parts of the globe except the frozen Antarctic. About 133 species (18 of them in this country) hunt all types of terrain in the world's forests, swamps, and deserts. Some owls have wingspreads nearly as great as a man's height; some are as small as sparrows. But we humans, prisoners of the daylight, rarely see owls. Since most of them do not undertake regular migrations, as do most other birds, we may never see large flight groups of them.

The screech owl is probably the most widespread American owl. It is divided by scientists into 18 races, each one varying slightly in coloration or size, which can be found from Alaska to Mexico, in rain forests as well as deserts. Second in abundance is probably the barn owl which has thrived by taking up quarters in human habitations. The largest American owls—the great horned, the great gray, and barred—generally hunt in dense forests.

During the day, when their specialized gifts are of little value, most owls remain in concealment, dozing in their roosts or sunning themselves on a nearby tree branch.* For the lord of the night is the dupe of the day. Lethargic, it is open sport for the smaller birds, especially crows and jays, which mob it unmercifully. But so expert is the owl's concealment that it is rarely found; a barred owl whose woods I visit in summer is discovered only three or four times during the season.

The owl's subdued coloration resembles sunlight splotching against the bark of a tree, and he can sit perfectly immobile, so still that one

* Exceptions are the hawk owl, snowy owl, and the short-eared owl which often hunt during the day over tundra, prairies, fields, and marshes. Barred owls also do much hunting in daylight, and the pygmy owls seem to hunt entirely during the day.—The Editor

ornithologist, after watching an owl for 15 minutes, was convinced that the bird had ceased to breathe! Closer inspection revealed that when the owl inhaled (thus tending to make it larger), it compensated for this motion by pressing its feathers tightly against its body. When it exhaled, which would normally shrink its size, it puffed out its feathers. Result: no apparent motion whatever.

A majority of these silent hunters of the night are covered from bill to needle-sharp talon with continuous feathers so fine and soft that they act as sound mufflers; even the base of the owl's beak is hidden under a mass of down. The flight feathers have fuzzy edges, unlike those in other birds, with the result that almost all whirl from striking the air is eliminated. The body plumage is sleek at its tip, like a duck's to repel rain, but towards the roots it is so soft that Alexander Wilson has said these feathers "may be touched without being felt." Even the big owls are mostly feathers. After they bathe it is possible to gauge the true size of their bodies, as the feathers are matted down. They are scrawny, their necks a thin pivot, the legs resemble straight stilts.

Owls frequently tangle with prey much larger than themselves—housecats, porcupines, turkeys. Even the tiny pygmy owl of the Pacific States, a brood of a bird little larger than a bluebird, takes on gophers. That is because of the specialized design of the talons. Each leg has a thick tendon which runs down it and, on a sort of pulley, around what in our foot would be the heel. Then the tendon branches to the four needle-sharp talons. When the owl hits its prey, the legs draw up—automatically from the impact—and the tendon clenches the toes, driving in the talons. In addition, some powerful muscles farther up the leg aid in forcing the talons in to the hilt. The grip is so tenacious that sometimes the only way a person grasped by a stubborn owl can be freed is by cutting the bird's tendons.

An owl's eye is adapted to make full use of every glint of available light. Whereas our eyes have cone cells (which help us to discriminate colors) and rod cells (for light-gathering), the owl's eye is tightly packed with light-gathering cells.

(Thus, it lives in a world colored only by shades of gray.) And each of these rods contains a remarkable chemical known as "visual purple," which converts even a glimmer of light into a chemical signal which is flashed to the brain and gives the

bird an actual sight impression—when a human would see only the presence of light.

The owl's eye is considerably larger than the human eye, and does not rotate in its socket. Each eyeball is fixed, like a headlight on a

Barred owl. Photograph by Edwin J. Howard.



car. So, to see in different directions, the owl is endowed with an extraordinary ability to rotate its head.

This was demonstrated to me when I observed a large owl perched on a tree stub in my woods. I suddenly realized that I had made two complete circles of the bird in my inspection, yet its head always faced me so as to keep me within sight of its wary eyes. But the head wasn't actually twisting continuously in one direction. When the neck had revolved as far as it could go, about three-quarters of a circle, it whipped around to start rotating from the beginning point again. But the action is so rapid that it appears to be one fluid motion.

The owl has control over the pupils of its eyes, expanding them at night to increase their light-gather-

ing power, contracting them to the most delicate pinpoint during the day. It can even work the pupils of each eye independently so that one eye appears to attend to an object in deep shade and the other to a happening in bright light. Because of these delicate adjustments, most owls have excellent day vision, too.

Wondrous as the owl's eyesight is, ornithologists for many years still could not explain how owls can capture prey on overcast, moonless nights when there is no light available. It took a graduate student at Cornell University, Roger Payne, to prove how the birds do it.

For his experiments, Payne carefully sealed all the openings in a long shed so that it was completely light-tight. Then he spread dried leaves on the floor and gave a

barn owl the freedom of the shed.

When he turned off the lights and released a live mouse, he could hear the mouse move in the dried leaves, then felt a draft of air as the owl left its perch and dived to the floor. Immediately snapping on the lights, Payne found the owl with the mouse in its talons.

So unbelievable was it that an owl could catch prey in complete darkness that many explanations were attempted. Experiments were run to see if the owl was perhaps relying on an acute sense of smell, or if it was helped by invisible heat waves, as rattlesnakes are in locating prey. Results of tests: negative. Final confirmation that the owl performed its feat solely by acute hearing came when Payne plugged one of the bird's ears. The owl went way wide

The eyes of this great horned owl have light-gathering cells and a remarkable chemical, "visual purple," which help it to see in dusk or darkness. Photograph by G. Blake Johnson.



of the mark. When the ear was unplugged—end of one mouse!

Much of the owl's amazing hearing comes from the design of its ears. The horns or tufts of feathers on many owls are not ears at all, but probably decorations valuable in camouflage. The ear openings in some species are so large that they entirely cover the sides of the head. Beyond this, an owl's head is wide and flattened, setting the two ears far apart. This means that a sound wave will arrive later at one ear than another—an infinitesimal time lapse to be sure, but sufficient to give a clue to the sound's direction. Many owls also have lopsided ears—different in size or shape on each side—as a possible aid in giving different sound impressions and locating the source of a sound.

The owl's face is ringed by a disc of stiff, curved feathers which collect and bounce sound waves into the ear much as happens when we cup our hand to an ear to catch an indistinct sound. Sounds collected by feathers are funnelled into the eardrum, largest in the avian world.

Owls use sound to attract their mates. They have a tremendous variety of calls and probably no species duplicates another. There may be a practical reason for that. In the night, a mistaken call might attract a mate of the wrong species.

These calls are a bedlam of mournful night cries, wails, and shrieks. The barred owl can be identified by its maniacal laugh, the great horned owl by its panther scream, the screech owl by its eerie tremolo. Some of these calls resemble hisses, groans, saw-filing, snores. Burrowing owl young sound exactly like a rattlesnake's buzz—from which has arisen the folklore that these owls live contentedly with rattlers in underground burrows.

An owl is, amazingly, among the most tender of mothers, and can be a ventriloquist in defense of its nest. When Lewis W. Walker, a wildlife photographer who has made a special study of owls, once discovered a nest, his ears were besieged by the shuddering sounds of angry bobcats. When that failed to scare him off, the mother owl flew from her nest into high grass and made the anguished cry of a small animal in distress. Finally, when nothing else



The pygmy owls, no larger than bluebirds, hunt by daylight. They live in western North America and are owls of the forest. Photograph by Russell Kinne.

worked, she threw herself on him, ripping with her talons.

"Owlness" is typified by the great horned, widely distributed throughout the forested regions of the New World. It is the lord of the night to which every bird and mammal, except the largest, pays tribute. Ernest Thompson Seton said of this species: "All I have seen of them would make me rank these winged tigers among the most pronounced and savage of the birds of prey." Charles Broley, the retired banker who became the leading eagle authority, learned that the only living thing able to dislodge an eagle from its nest is a great horned owl: about one of every 20 eagle nests he examined had been commandeered by a great horned.

Although no heavier than a roasting chicken, the great horned strikes down geese many times its own weight. It may kill and eat other owls that it finds in the woods, and

it sometimes preys on the larger hawks.

In the harsh days of winter, right after the new year, while every other creature that has stayed north is struggling to survive, the great horned begins a new life cycle. It does not build a nest of its own, but usurps a sturdy one built by an eagle or a hawk. When the owner returns in the spring, no matter—for the great horned has but to flick its powerful sickled talons and the mightiest of birds retreats.

All during January and February, as the blizzards roar and blankets of snow descend, the female great horned owl incubates her two or three eggs. The male, smaller in size but no less fierce and hardy, perches silently on a tree stub to defend the nest and to watch the landscape with great yellow eyes for a careless hare or mouse. The booty is brought home and piled high on the nest, as much as 18 pounds of larder at a

time to feed the owlets (they will eat their own weight in food every night if it is available).

In a few weeks, the owlets have become as fierce as their parents. When they are about 12 weeks of age, the parents stop feeding them, and fly off into the forest to again take up their solitary lives. If both parents survive, the same pair will mate again the following winter.

Studies of owl food-habits from all over the country reveal that owls dine almost exclusively on rodents and other small animals. Yet only 14 of our 50 states protect all of

them—in spite of the fact that they are one of the most beneficial of all birds, rivaling even the hawks as controllers of rodents whose fertility could overwhelm our crops and forests. One authority states that in a single night a barn owl may capture as much small prey as a dozen cats. A British study revealed that in one area, owls took 23,980 rodents each year *per square mile*.

Despite the overwhelming evidence of their sheer economic value, owls are being allowed to disappear from the landscape. They are being shot. Their habitat is being de-

stroyed by bulldozers. The "landscaping" we now give our woods in removing dead timber decreases the nesting sites of those owls that nest in hollow trees. Leaving an occasional dead tree standing in the woods, and placing large nesting boxes high on the trunks of healthy trees, can help correct that.

Telling the story of owls is a worthy project for any group. Once common, owls are retreating before man and civilization. Wouldn't we be well advised to give more respectful protection to these beneficial lords of the night? —THE END

THE FLYING MAMMALS—Continued from page 159

United States, southeastern Canada, and in the Pacific coastal regions north of the Columbia River to the southern tip of Alaska.

The silver-haired bat is blackish-brown, with white-tipped hairs on the middle of its back. It is a forest dweller, with a range similar in size to that of the little brown myotis, but more southerly.

The red bat is brick- to rusty-red and frosted, the female lighter in color than the male. It is a solitary forest dweller, with a plumpish face and small rounded ears. It lives in most of the United States except southern Florida and the northwest, in southern Canada, in Mexico, and in Central America.

The big brown bat is brown—lighter in desert regions—with black membranes. It may be distinguished by its large size and color. It is a dweller in buildings, crevices, and caves in Central America, Mexico, the United States except most of Florida, and in southwestern and extreme southeastern Canada.

The hoary bat is relatively large, yellowish to mahogany, with frosting, a buff-yellow throat, and rounded ears. It lives in forests in northern Mexico except Baja California, in the United States except southern Florida, and in the southern half of Canada.

The chances of identifying a bat on the wing are slight, especially against a forest background, where the bat is like a bit of night shadow, fluttering against varying darkness. I was fortunate enough to sight a red bat in the light beam of a lantern as the bat swooped on a moth. A little brown myotis snatched a large spider from a thread in our

cabin's open doorway, so near that I heard the snick of its teeth. And with binoculars I identified a small group of hoary bats hanging upside-down on the high branches of a spruce tree on a summer afternoon.

It is regrettable that such interesting mammals are so retiring and nocturnal that they offer us few opportunities for close observation of them outside of captivity. Sometimes an opportunity to do so comes when least expected.

In the Chicago Loop some years ago, I found a little brown myotis collapsed miserably on the concrete sidewalk outside the office building where I was employed. It moved slightly when I picked it up but was so parched with thirst that its mouth was open and its tongue swollen. An interested soda clerk gave me some paper straws and, in my office, I managed to give the bat several drops of water from the end of a straw. It revived. I remembered that the bats of my childhood had not seemed to mind being enclosed as they often huddled in small attic spaces behind chimneys. I put my patient safely out of sight in a large desk drawer. After several more drinks it was able to crawl feebly. I took it home in a ventilated paper box and hung it on the edge of a high shelf in my dressing closet.

When dusk came, it fluttered about in the closet. I filled the basin in the adjoining bathroom with water, and opened a window from the top. The bat flashed gracefully back and forth, scooping up water in flight with its tongue before it found the opening and went into the night. Next morning it was hanging indoors again from the high

shelf in my dressing closet. During the night it had returned through the open window.

It remained with me throughout the summer. Sometimes it stayed away all night, but more often hunted only during the hours after dusk and before dawn, with a rest in the closet between. During a plague of mayflies, when the streets and air were literally filled with these delicate creatures, my bat was gone only an hour at a time—sometimes less—and spent most of the night resting indoors. It seemed that the durations of its hunting trips was determined by the availability of suitable food.

My bat was very clean and often spent 20 minutes or more in grooming itself. It licked its wings and fur systematically as far as it could reach with its long tongue. Then it moistened its hind feet and went over its back and parts of its head. It cleaned its ears thoroughly with its moistened toes. As it allowed me to handle it after the first few days, I could examine it closely but found no signs of any vermin.

I do not think the bat liked being stroked, but it tolerated my touch. However, it did seem to enjoy flying around the living room, thus creating near-panic several times when I had guests. I always hoped that when it disappeared in the fall, it went to some warm and moth-rich place to spend the winter.

This bat and its relatives deserve nothing but the best, and I believe our intellectual curiosity will be satisfied and our knowledge much enriched if science can unravel the secrets of the bat's sonar, regulation of its body temperature, metabolism, and gestation period. —THE END

Reprinted from the New York Times, June 11, 1960

British and U. S. Bird Watchers Mark Theodore Roosevelt Hikes

Oyster Bay Group Re- traces Route President Took in Walk 50 Years Ago

By Ira Henry Freeman

OYSTER BAY, L. I., June 10—A pair of bird study walks taken by President Theodore Roosevelt fifty years ago were commemorated here today by forty bird watchers who took a similar walk at the Roosevelt home on Sagamore Hill.

Meanwhile, in Brockenhurst, England, a group of American, British and Canadian nature lovers were re-enacting another of Roosevelt's bird walks.

The leader of the Long Island walk was Dr. Robert Cushman Murphy, Lamont Curator Emeritus of Birds at the American Museum of Natural History.

He told the bird watchers who assembled on the veranda of the Roosevelt house here, that Colonel Roosevelt had observed forty-two species on his English walk on June 10, 1910, and forty-three on a walk at Sagamore Hill nine days later.

Observers Compare Species

"We have Colonel Roosevelt's list of June 19," Dr. Murphy said. "Let us see how the list of birds we observe here this morning compares with his."

The bird watchers then waded in

luxuriant poison ivy through the woods to the Oyster Bay shore, listening intently for bird calls and sweeping the dense foliage with binoculars. Dr. Murphy, a tall, lean outdoorsman in a khaki safari suit, led one group while John K. Terres, editor of the Audubon Society magazine, led another.

Back at the house after two hours of looking and listening a compilation showed forty-four species had been observed by the party. Colonel Roosevelt had spotted seventeen that today's group did not see but they had spotted eighteen not on his list.

"I thought we were very short on warblers today," Dr. Murphy commented. "Although we did hear and see a warbling vireo near the parking lot—a very rare bird on Long Island. We were lucky to spot a pair of chimney swifts too. They were abundant in Colonel Roosevelt's time."

Mrs. Ethel Roosevelt Derby, the former President's daughter, arranged the two anniversary walks but she was absent today because of illness in her family.

Leaders of the first Roosevelt commemorative birding trip at Sagamore Hill, June 10, 1960, compare notes. Dr. Robert Cushman Murphy (left), Lamont Curator Emeritus of Birds, American Museum of Natural History; John K. Terres (center), Editor, Audubon Magazine; James Calligan (right), Resident Warden, Theodore Roosevelt Memorial Sanctuary, Oyster Bay, New York.



Hike Through New Forest in England Includes 50 Persons of 3 Nations

By Seth S. King

BROCKENHURST, England, June 10—Fifty years ago yesterday Theodore Roosevelt, accompanied by Sir Edward Grey, then Britain's Foreign Secretary and one of the country's leading bird experts, hiked through wilds of the New Forest to watch English birds.

Today his walk was commemorated with another journey through the wilds of New Forest by a procession of American, Canadian and British ornithologists, wildlife specialists, conservationists and ordinary bird lovers.

At times more than fifty persons were strung out along the seven miles of paths, roadways and fire bricks in England's forest preserve.

See and Hear 52 Species

By day's end the watchers had seen or heard fifty-two species, seventeen more than the thirty-five birds Mr. Roosevelt and Sir Edward had noted half a century ago.

New Forest, fifteen miles northwest of Southampton, contains almost 100,000 acres of timber and moorland. In some sections it is as unspoiled as when it was

Continued on page 196



Handling and photographing a porcupine can be —
what the author terms —

A Thorny Assignment

By Gordon S. Smith

All photographs by the author.

IMPULSIVELY I retreated. Whang! Whang! A salvo of quills were embedded in the log, like pins in a cushion.

I waited. Agnes, my porcupine temporarily in captivity, slowly raised her head in my direction. She turned, sat hunched up, and commenced to chew again on the piece of carrot.

We were in the animal studio endeavoring to obtain good live porcupine portraits. On the whole our attempts were successful, but occasionally Agnes became upset, or nervous and . . . whang!

How I became involved with Agnes started from good-natured teasing. Being a Director of the Zoological Society of Buffalo brings me very close to the animal world, particularly in the city. On a visit to the Museum of Science, I was watching Mr. Clayton Freiheit, Assistant Curator of the living specimens, feeding Agnes.

"Like to take her home for a while, until we finish renovating her quarters?" Clayton casually remarked. He had a mischievous twinkle in his eyes.

He was half serious but, unknown to him, I had looked forward to this opportunity for many months.

"Why yes," I replied, and inwardly chuckled as Clayton looked at me with an air of amusement. He slipped her in an animal carrier and that was that.

My home has housed many unusual animals. Acclimatization is a slow two-way affair. Different animals of the same species will react in different ways to their unfamiliar

"I felt the point which was needle sharp . . . the opposite end (right) had a short weak root."



and unnatural surroundings. Some are scared, some are inquisitive, others indifferent. Agnes was indifferent.

From the first, she was sensitive to immediate contact—a carryover from the wild state. A porcupine's senses of smell and of hearing are not acute, and its eyesight is poor. To make up for this, its sense of feeling, or contact, is acute. Interspersed with the quills it has long

guard hairs. So sensitive are these that by lightly blowing on them, particularly near the tail, I can set the animal on the defensive with its tail whipping.

I inspected the quills that were driven in the log. Agnes continued to chew on her carrot. The quills ranged from one to two inches long—the most effective length for defense. The longer quills in her body were slender and weak; these two-

← "I photographed Agnes with a carrot clutched between her paws."

Readers of *Audubon Magazine* will remember Mr. Smith's sensitive picture story, "Portraits of the Inquisitive Young," published in our March-April 1960 issue. We are pleased to offer another by this fine photographer, who is also a director of the Zoological Society of Buffalo.—The Editor



"She appeared to be in a trance . . . it could be broken by touching her."

"Agnes doing her 'exercise dance.' "



inch ones in the log were firm and sturdy.

Removing one from the log, I felt the point which was almost needle sharp. The brown area seemed smooth in one direction and slightly rough in the other. Along this surface were scales, like shingles, but arranged in spiral form and pointing backwards. They were too small to see with the naked eye, but it is these scales that retain the quills in the flesh of any animal that has attacked the porcupine. The scales also have a tendency to flare outward when moist, a movement which further helps the quills take hold. The rest of the shank of the quill was smooth and white. It ended in a short weak root, which could easily loosen from the porcupine's body when the point had found its target.

Porcupines do not SHOOT quills!

If they did I'm sure I would not have been so eager to have Agnes at home. Quills may occasionally fall out or fly a couple of feet through the air if the animal shakes itself; but they fall harmlessly to the ground.

Agnes was still chewing. I quietly took a photograph of her with the carrot clutched between her paws. There was no objection and no tail-swishing. When she was finished she let me rub her nose and gently stroke her head (in the direction of the quills, of course). She let me lift her paw and place it on the log for another photograph. She was very patient and so was I. We were getting along well together.

According to Dr. Albert R. Shadle, who has had 20 years of experience with porcupines, a captive one displays an interesting habit not seen in the wild. Agnes lived up to these reports — she danced. "Doc" called this an "exercise dance." Apparently, the basic dances are the same, but each porcupine has its own variation of it and, with the porcupines that "Doc" has kept at the University of Buffalo, he could distinguish his charges simply by watching each one dance.

I watched Agnes. She supported herself by her rear legs and tail; lifted her head to the heavens, as if in song; swayed her body like an African dancer; patted the air with her forepaws, and went through a series of rhythmic gyrations. She ap-

Continued on page 196



"She let me lift her paw and place it on a log."

BIRD FINDING WITH *Sewall Pettingill*

WHERE TO GO
WHEN TO GO
WHAT TO SEE



Netherlands Leeward Islands

During a recent lecture tour in the Caribbean, Mrs. Pettingill and I spent six January days in Curacao and Aruba, two of the three Netherlands Leeward Islands (the other is Bonaire) lying off the northwest coast of Venezuela. Like the hundreds of winter-vacationing Americans there at the time, we visited enticing shops (both islands are "free ports") and purchased more merchandise than we needed. In Willemstad, the capital of Curacao, we watched the famous pontoon bridge do what it was made to do—open and close, and walked some of the narrow streets lined with quaintly gabled, brightly painted, eighteenth-century houses. On Aruba, we improved our tan by spending a few hours horizontal on its greatest tourist attraction, Palm Beach. In other respects we were quite unorthodox by looking for birds instead of following the admonitions of the tourist bureaus.

Curacao and Aruba are centers not only of a thriving tourist trade but of booming oil industries as well. Their densities of human population

are consequently high. Nevertheless there are places, outside the settled areas and beyond the confusion of the vast, ugly oil refineries, where one may find native birds.

On either Curacao or Aruba the bird finder will have no difficulty obtaining accommodations (advance reservations essential) to suit his means. As most places for birds are off regular bus routes, he will need to hire transportation by taxi (readily available). Before attempting any trip, he should first acquire one of the fine road maps published by the oil companies (Shell, on Curacao; Lago-Esso, on Aruba). He will have no trouble making inquiries because English is widely spoken. The Royal Dutch Airlines, KLM, has regular service between the two islands and to Bonaire.

Both Curacao and Aruba, and Bonaire too, have only a light rainfall and practically no running fresh water. There are, however, a few ponds where water accumulates during the so-called "wet" season (October through January) and stands for an indefinite period thereafter. Owing to these semi-arid conditions,

the predominating native vegetation consists largely of cacti and thorny shrubs. Breeding birdlife is limited accordingly to about 50 species, augmented in the fall, winter, and spring by 60 regular migrant or visiting species, mostly from North America. Seabirds are generally sparse; several terns and the magnificent frigate-bird are the only nesters. Transient and wintering shorebirds occur in impressive numbers, attracted by the many extensive beaches, mud flats, and salt-water lagoons. The principal interest for the American bird finder is in the exotic land species, the numerous migrants from his homeland, and the flamingoes on Bonaire. The chances of his enjoying good weather—ample sunshine, temperature between the high seventies and low eighties, and a steady, eastern trade wind—are reasonably certain on almost any day in any season.

Curacao

Besides being the largest of the three islands (210 square miles) with the heaviest human population, Curacao has the richest birdlife, in-

cluding 42 breeding species. The fact that it has more birds than the others is attributed in part to more varied and extensive habitats, ranging from semi-deserts to the contrastingly lush groves of coconut palms, papaya trees, and other cultivated plants of the many fruit plantations.

We took two trips during our January stay, both of which rewarded us with a good list of birds, as well as fine views of the island's more attractive natural features.

The first was west from Willemstad to the Malpais Dam, about six miles distant. On mud flats along the way we saw snowy egrets, little blue herons, and both greater and lesser yellowlegs. The waters impounded by the dam formed a pond or reservoir, partly flanked by a thick tangle of shrubs and vines and a few scattered trees. The dam itself and a road along one side of the pond made good vantage points. No sooner had we arrived and stopped the car's motor when I heard two familiar songs, those of the yellow warbler and northern waterthrush. On the pond rested a lesser scaup duck. Moments later I heard the calls of a sora from one of the thickets, and discovered several spotted sandpipers on the shore at the far end of the pond. We observed three resident tyrannid flycatchers: the tropical and gray kingbirds perched prominently on branches over the water and the much less conspicuous brown-crested flycatcher. Other native birds that we eventually turned up included bare-eyed pigeons, groove-billed anis, yellow orioles, and bananaquits.

The second trip took us from Willemstad westward for 25 miles or so through the interior of the island to the settlement of Westpunt, near the western extremity. Our paved highway traversed many fruit plantations and forests of manchineel, *Hippomane mancinella*. During our roadside stops near human habitations, farmyards, and open woods we had no difficulty seeing seven of Curacao's commonest birds: white-winged doves, ground doves, Caribbean or screaming paroquets, emerald hummingbirds, common or whistling troupials, *I. icterus*, black-faced grassquits, and rufous-collared sparrows, *Zonotrichia capensis*. Near Christoffel Mountain, which dominates the island's western landscape, we en-

joyed watching a white-tailed hawk soaring not far above us.

Aruba

Aruba (69 square miles) has a more arid aspect than Curacao, lacking the luxuriant fruit plantations and manchineel thickets, and featuring instead huge rock formations and stone-strewn deserts. Its well-known, topographical landmark is the Hooiberg (Haystack), a peculiarly shaped hill in the center of the island. As a result of a dense human population and the bustling oil refineries, the original birdlife is now confined mainly to a few uninhabited stretches of Aruba's northern half, where there are organpipe cacti and the strangely one-sided divi-divi trees, *Caesalpinia coriaria*, and to the desolate hill country in the southern half, notably around Jamanota, Aruba's highest point, where there is considerable desert scrub on the slopes and in the lowlands. Aruba has altogether 34 breeding species.

The three areas we found most productive ornithologically are described below. All are clearly marked on the Lago-Esso map.

Frenchman's Pass, where a paved road goes between two high ledges. In the immediate vicinity are dense thickets of cacti and thorny shrubs with intervening barren ground. Among the birds we discovered here were sparrow hawks, crested quail, ground doves, screaming paroquets, both the emerald and ruby-topaz hummingbirds, southern mockingbirds, whistling troupials, and black-faced grassquits.

Spaan's Lagoon, just southeast of Frenchman's Pass and reached from the same road. Bordered by mangroves in which there were northern waterthrushes singing, the lagoon itself yielded both common and snowy egrets, and great blue, Louisiana, little blue, and green herons.

Jamanota Country, reached from any one of several country roads, one as good as another. This was by far the most interesting area we visited. Besides the ubiquitous ground doves, paroquets, mockingbirds, troupials, and grassquits, we observed such species as the caracara, Cayenne nighthawk, brown-crested flycatcher, black-whiskered vireo, yellow warbler (singing), and rufous-collared sparrow.

Bonaire

Unfortunately we were unable to visit Bonaire (95 square miles), which is untouched by industrialization and has only a small human population. While much of Bonaire's topography is reminiscent of Curacao's its vegetation is without the luxuriance, there being just a few fruit plantations. Cacti and thorny shrubs comprise the predominant plant types. The number of breeding bird species is 39, three of which do not occur in the other islands. One is the yellow-winged parrot, which inhabits an extensive tree growth in the hill country (mainly the vicinity of Brandaris Mountain, the island's highest point) of northwestern Bonaire and the fissures in the cliffs bordering the north coast. The second is the pearly-eyed thrasher, which is evidently restricted to a large fruit plantation in the vicinity of Fortein near the north-central coast. The third—and by far the stellar bird attraction in all three of the Dutch Leewards combine—is the American or West Indian flamingo, *Phoenicopterus ruber*. Several hundred to a thousand or more pairs nest on the mud flats in the center of the Pekelmeer, a shallow salt lagoon in the southern part of the island. The birds arrive on the breeding area in May and depart in the late fall, but a few hundred usually stay on the island through the winter, some at the Pekelmeer and others at the salt lagoons of Goto and Slagbaai in western Bonaire.

Fairly good accommodations and transportation by taxi are available on Bonaire. Most of the local taxi drivers will know where the flamingoes are at a given time of year. The birds are quite wary, so you cannot hope to approach them closely.

The most comprehensive and useful publication on the birds of the Dutch Leewards, and the one from which I have drawn information, is "The Birds of Aruba, Curacao and Bonaire," by K. H. Voous (in English), published as Volume VII of a series called "Studies on the Fauna of Curacao and other Caribbean Islands" (Martinus Nijhoff, The Hague, 1957) and obtainable by purchase through the Zoological Laboratory of the State University, Utrecht, Holland.—THE END



American Bird Songs

IN TWO OUTSTANDING VOLUMES

AMERICA's birds—both familiar and rare—sing out with clarity and authenticity on these two delightful records. The beauty and fidelity of sound are a tribute to the knowledge, patience, and consummate skill of Professors Kellogg and Allen, Cornell University's world-famous ornithologists.

Each record contains the voices of more than 50 birds, providing an authoritative guide as well as unusual entertainment.

12-inch, double-faced, vinylite records,
33⅓ rpm. Each vol., \$7.75, postpaid



The Songs of Insects

CALLS OF THE COMMON CRICKETS,
GRASSHOPPERS, AND CICADAS OF
EASTERN UNITED STATES

THE BUZZES, trills, chirps, and lips of 40 varieties of insects make up the shrill symphony that has been expertly recorded on this record. Each performer is introduced by an announcer, who comments on the call or song.

The Songs of Insects brings you a new listening experience—a concert of primeval instrumentalists of the fields and back yards, a concert which most of us have never really listened to before.

12-inch, double-faced, vinylite record,
33⅓ rpm. \$7.75, postpaid

For further information on these and other wildlife recordings, write:

**Cornell University
Records**

A division of Cornell University Press
124 Roberts Place, Ithaca, New York

Attracting Birds



Letters from Bird Attractors

Editor's Note: Occasionally, we fill our bird attracting column with letters about experiences of our readers. We invite your brief accounts of observations that may be of interest and value to other bird attractors.

Birds and Picture Windows

The readers of *Audubon Magazine*, who have had birds killed or maimed by flying against picture windows, may care to try a device which has been effective at my home.

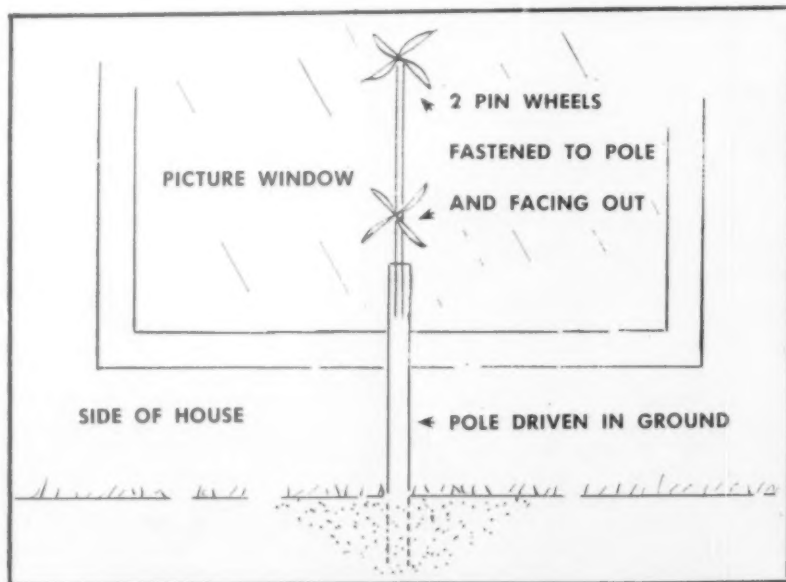
On the premise that if the birds could be distracted in some way as they flew toward the picture window, I bought at the ten-cent store a couple of colored plastic pin-wheels which are mounted on wooden sticks. I nailed them to the top of a pole about six feet high and drove the pole into the ground about three feet away from the outside of the picture window. The pin-wheels were fastened to the pole one below the other

and at slightly different angles in order to catch the wind from various directions.

Apparently this device, whether the pin-wheels are spinning or not, is seen by the birds and causes them to stop flying against the picture window. A rough sketch of it is shown below.

If some of your readers will try this simple device and report the results to you, I'd appreciate knowing about it. If it is generally successful, I'll pass the word along to other national organizations which are dedicated to the preservation of birds.

JOHN M. WILLIAMS
Hendersonville, North Carolina



When writing advertisers, please mention Audubon Magazine

A Bird-Feeding Record?

I thought you also might be interested in the amount of bird seed that is fed to birds by Dr. Dean Hart, a dentist in Potsdam. His office and home are in separate locations, thus he has two feed areas that he maintains. I have verified this at the store where he buys his bird seed (and where, incidentally, I do, too). For a ten day period (approximately) he feeds the birds at his home and office, the following amounts:

- 200 lbs. sunflower seed
- 200 lbs. scratch feed
- 200 lbs. wild bird seed
- 1 large bag of shelled walnuts (for squirrels)
- 2 large bags of shelled peanuts (for squirrels)
- suet, peanut butter
- 10 loaves of bread (one every day)

He has been doing this several years and all the birds seem to be grateful judging by the flocks that are "in residence" constantly. The bird species that predominate at his stations during the winter are: evening grosbeaks, redpolls, blue jays, pigeons, English sparrows, tree sparrows, chickadees, nuthatches, hairy woodpeckers, downy woodpeckers, and starlings.

This amount of feeding by one private individual, I believe, sets a record in northern New York. Are there other individuals in the United States that go this deeply into winter feeding? I think we have some of the fattest evening grosbeaks in New York state.

JOHN R. KELLER

Potsdam, New York

Offers Free Mulberry Seedlings

We would like to share (gratis) mulberry seedlings with our fellow members in the Audubon Society. We have enjoyed our large fruit-bearing tree more than any single feature on our property. For two months of the year it attracts just about every "bird in the book;" often a dozen or more species feeding at the same time, with plenty for all. Anyone interested may have a tree just by telephoning to see whether we are home.

EDITH CAUCHI

West Redding, Connecticut
Pioneer 8-0315

Doves in a Basket

Thank you for printing my letter in the March-April issue of *Audubon Magazine* with reference to my experiences with the nesting of mourning doves in a basket.

As a final note to the story, last year, 1959, they raised three broods in the

basket, starting in April and continuing through the end of September. At this writing, (April 28), they are brooding two young, having started their nesting activities on April 2.

I'm certain this pair of doves must be the envy of all the others in the neighborhood with their "pre-fab" home.

MRS. R. E. GIBSON

South Bend Audubon Society
South Bend, Indiana

Home-made Suet Feeder

Congratulations on your splendid articles and editorials of the DDT menace to our birds. It is to be hoped that legislative action against or at least regulating the use thereof will be forthcoming.

Perhaps some of your readers might like to know an easy way to make a suet-holder and dispenser, which I discovered about a third of a century ago. Take an ordinary rat trap and remove everything except the wooden base, the bar, and the springs. Then fasten a piece of fine chicken-wire or coarse hardware cloth to the bar. You do this either by lacing it on with a piece of wire or by cutting the hardware cloth a bit oversized and bending the edges around the bar. Then you place the suet between the hardware cloth and the base, and the springs on the bar will effectively clamp the suet in place. The birds can then eat the suet either through the meshes of the hardware cloth or from the end. I generally fasten this dispenser to the top of a pole or to the side of a tree. As the suet is consumed, the bar clamps down further, never releasing the suet to any greedy animal, and always keeping it available to the birds.

One conspicuous advantage of this type of dispenser is the ease of making it, so that with little effort one can have many in one's yard. Another is the ease of filling and maintaining it. The grease from the suet protects the metal from rust, so that the first one that I made lasted about 20 years, and it probably would still be in operation if the tree that it was in had not been destroyed. These are visited by the usual chickadees, nuthatches, downy woodpeckers, etc.

RICHARD C. WARD

Baltimore, Maryland

Attract Beautiful Hummingbirds
3 HUMMINGBIRD FEEDERS \$1.50 Postpaid
Stained Glass Flowers lure Ruby-throated Gems of Flashing Right. "Just add sugar and water and serve."

WINTHROP PACKARD
Plymouth 3, Mass.
"Everything for Wild Birds"—Catalogue Free

When writing advertisers, please mention Audubon Magazine

Feed Your Favorites



PATENTED

Actual photograph of cardinal feeding

Designed to make the seeds in it accessible either to all birds, or only to cardinals, grosbeaks, chickadees, and certain others. Can easily be adjusted to exclude English sparrows. One filling lasts many days — seed fully protected from rain and snow — non-rust hardware — flow of seed is automatic — hulls kept out of seed hopper and also off your lawn — green baked enamel finish — a truly beautiful garden accessory.

BEVERLY SPECIALTIES CO.

10331 S. LEAVITT CHICAGO, ILL.
FEEDER \$7.75 POST PAID
STAND FOR FEEDER WITH
ENAMELED SQUIRREL GUARD \$6.50

Fountain Spray for Song Birds



Portable Spray to set in Your Bird Bath

Birds can't resist this rainbow mist — a unique portable unit which connects to hose outlet at house in a minute — permits independent use of garden hose — uses scarcely any water — adjusts from full rainbow mist down to 1/3 gal. per hr. — water always fresh — may also be used for gentle spraying of plants seedlings, or in greenhouse — solid brass, aluminum and stainless steel parts with 50 ft. miniature plastic hose — will not mark grass — longer hose available — makes your bird bath more useful and beautiful.

Price \$12.75 complete Post Paid

BEVERLY SPECIALTIES CO.

10331 S. LEAVITT ST., CHICAGO 43, ILL.
Spray pedestal only, with 6 ft. miniature hose and fitting to connect to your garden hose but without independent valve feature \$6.95.

THE PRESIDENT REPORTS TO YOU — *Continued from page 157*

John O'Reilly, a man skilled with words as well as a long-time personal friend of Bob, has, in his article on page 164, given us a glimpse of the unusual traits and talents which were combined in this man to produce a great scientist and conservationist.

We are glad Bob Allen will be around for the younger biologists to lean upon, and to follow, and to see that the rest of us never falter or fail in the cause that has been his life. You will be hearing more about, and from, him in future issues.

More Trouble for the Flamingo

Bob Allen's latest report reveals that the West Indian flamingo is in real trouble and that international action is needed to pull them out of a long decline. I was with Bob and other observers on Inagua in the Bahamas in early March when normal prenuptial behavior and good nesting conditions made us hopeful this would be a productive year for the world's largest remaining flock of this species. Now the news is bad. Torrential rains around the first of May destroyed most of the nests. If 1960 is a washout, this will make four years in a row with little or no reproduction on Inagua, during which this flock has skidded from more than 12,000 birds to about 3,000 pairs this spring.

None of the other colonies of the West Indian flamingo, *Phoenicopterus ruber*, is known to be thriving. Bob thinks the total population of the species may be down to 18,000 birds, perhaps as low as 15,000. That

is low in comparison with the 95,000 which is estimated to have been the original population.

Interference by negligent and busybody aircraft continues to be a factor of depletion; disturbance during the mating season can cause an entire flock to abandon the nesting effort. There is also international traffic in live flamingos which, though perhaps now legal under certain circumstances, must be brought under control. And the flamingo shares with other endangered wildlife the problem of human encroachments upon its habitat.

I intend to call these problems of the flamingo to the attention of conservationists at the biennial assembly of the International Union for Conservation in Warsaw this June, which I shall be attending for the National Audubon Society (before this magazine goes to press).

New Service at Holgate Sanctuary

Of special interest to our members and friends in the mid-Atlantic area is our new interpretative program started this summer for visitors to our Holgate Peninsula Sanctuary, at Beach Haven, New Jersey. Stanley Quickmire, graduate biologist of Glassboro State Teachers College, began work June 15 as resident naturalist. He will guide parties by appointment on field trips through the sanctuary during the summer season ending September 4. An Audubon warden also has been engaged to protect the wildlife of the area. For information about making an appointment to visit the Holgate Sanctuary, write directly to Mr. Quickmire at Beach Haven, New Jersey.

—THE END

LETTERS — *Continued from page 152*

Sparrow in a Lamp

As enthusiastic subscribers to *Audubon Magazine*, we submit the enclosed snapshot and case history, feeling sure it will interest other bird enthusiasts.

We live in a garden apartment, and one cold night last November, when our Superintendent was replacing a light bulb in an outside wall lamp, his hand touched something soft. Upon peering closer, he saw that it was an English sparrow that was perched on a cross-bar, above the light bulb, inside the lamp. The bird was completely protected from

the wind, rain, and snow, and was also deriving warmth from the bulb.

To our amazement each night thereafter, we would look up and see it perched in the same spot. This continued all winter long.

A few nights later, my husband took this snapshot, with a 35 mm camera, and flash-light bulb, at a distance of three feet from the lamp, looking straight up into the light.

We are now wondering how many other birds are smart enough to find such cozy sleeping quarters.

(Mrs.) VALERIE COSSART LIVINGSTON
New York City, New York

Killdeer Rescued from Mud

The rescue of the semipalmated plover from the ice (see "Letters," *Audubon Magazine*, March-April 1960) by Eugene F. Hartley, brought to mind a somewhat similar experience with a related species, the killdeer.

Our soil is gray adobe and when wet it sticks like tar. I had irrigated a spot in the garden toward evening, and the next morning heard complaining notes of adult killdeer and lispings peeps from their chicks. Investigation showed the tiny bundles of down were apparently held fast by the mud. They had wandered into the irrigated spot and their feet were so loaded with gobs of adobe they couldn't move. Ordinarily their spindly legs spin like bicycle spokes and get them out of reach, but now catching them was easy.

One at a time, I placed the chicks in the palm of my hand, legs dangling between my fingers, and sloshed their loaded feet up and down in water until they were freed of mud. That was all that was required. As good as new, they were able to rejoin the distraught parents. I feel certain they would have perished without the help.

L. CLAIRE HULBERT
Buena Vista Audubon Society
Vista, California

Photograph of sparrow roosting in lamp by Mr. Graham Livingston.





SUET FEEDER by



another Wildlife bird attractor

- Weather resistant $\frac{3}{4}$ " redwood, natural.
- 13" high by 7" wide by tapered, button hole mount.
- Hardwood perches placed for birds of all sizes with proper tail feather support.
- Postpaid \$6.60. Will ship, and bill later.

WILDLIFE REFUGE, Box 487, East Lansing, Mich.

MARTIN HOUSE

The Garden Craft 10-compartment Martin House is the smallest size recommended for attracting these sociable songsters. The Garden Craft Martin House has attracted purple martins every spring, year after year. Patented, take-apart construction makes cleaning easy. Furnished either unfinished or painted green and white. Size 21 x 21 x 24 $\frac{1}{2}$ in. Shipping weight 60 lbs.

Unfinished, f.e.b. Crystal Lake.....	\$22.00
Painted, green and white	28.00
Crating charge	2.50

(Erection pole available)

Write for catalogue

STERNE LUMBER COMPANY
50 Woodstock Street, Crystal Lake, Illinois



*They can ask
101
questions*

Summertime Questions AUDUBON NATURE BULLETINS Can Answer

- Is this a bullfrog?
- What kind of a turtle is it?
- How can I tell if it is poison ivy?
- Is it a poisonous snake?
- What kind of a fern is it?
- What are those things growing on the tree stump?
- How did the spider make that web?
- How do trees get their food?
- Just what is the sea like anyway?

9 Bulletins . . . only 1.00
Including 10¢ postage and handling

The Bulletins are four pages, 8 $\frac{1}{2}$ x 11", illustrated with line drawings or photographs, written for adults; non-technical, easy to read and understand. 55 Bulletins are available on various natural history subjects. List of titles sent upon request. Set of the 55 — \$5.50 including postage and handling.

National Audubon Society
1130 Fifth Avenue, New York 28, N. Y.

HAIL — Continued from page 171

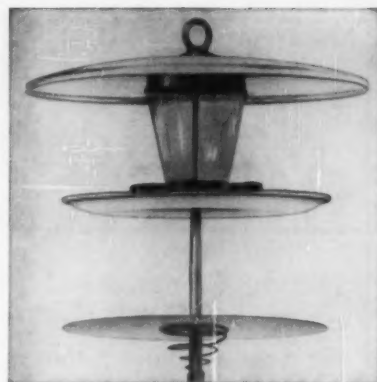
of the continent's best waterfowl-producing habitat.

However, 1953 and 1954 were both classed as severe hail years, and scores of storms occurred in both years whose paths were never plotted except by the Insurance Board. Based on their charts, however, and the factors of visibility affecting our aerial surveys, it is likely that some 150,000 ducks were lost by hailstorms in the Province of Alberta in 1953 alone, and nearly as many more could have been lost the following year. If we take our factors of visibility into account, these losses may have been as high as 250,000 in both 1953 and 1954.

Aside from periodic outbreaks of botulism in some of our western waterfowl concentration areas, few other observed natural forces cause the loss of so many waterfowl in any one season. Even this powerful natural force may be tamed in the future, as much time and money are now being expended in Alberta and in other western areas in attempts to modify these devastating storms. Present efforts are directed toward changing the hail to rain or "soft" hail by seeding clouds with carbon dioxide ice or silver iodide from an aircraft, seeding with silver iodide generators on the ground, or seeding by projectiles shot into the clouds where they release their chemicals. Tremendous changes have been noted by farmers whose crops are located in major hail paths when cloud seeding has been practiced. Knowledge of the paths of these storms, the areas and conditions which give birth to them, and the incidence of their frequency is paying dividends. Continuance of these experiments may save millions of dollars worth of property as well as hundreds of thousands of songbirds, waterfowl, and small mammals. Since consideration has been given here only to the importance of hail in one Canadian province, and since hailstorms are common throughout so much of this continent, scientific efforts to tame this destroyer will save inestimable numbers of birds and mammals. Based on experiments in Alberta, it appears that we may look forward to some alleviation of this destructive force, at least in one important segment of the Canadian waterfowl breeding grounds.

—THE END

When writing advertisers, please mention Audubon Magazine



FEED THE BIRDS with a BOWER BIRD FEEDER

This attractively styled aluminum bird feeder keeps food dry and clean for all feathered friends—or attracts them if you are not already so fortunate. Colored gold by anodizing and black; with 3-section, five foot, cadmium plated steel post; tilting squirrel guard and clear plastic food container. Holds 2 lbs. feed; has 15 in. diam. roof. Complete, for yourself or that different gift.

Postpaid, for only **13.50**

Also available for hanging, without post and guard.
Postpaid, \$9.95



Post has metal step for easy insertion.

Satisfaction Guaranteed

BOWER MANUFACTURING CO., Inc.
1021 South 10-F Goshen, Indiana

The Feeder For Hummingbirds Only



This is the only improvement in Hummingbird feeders ever made. Neither the bees nor any other bird can reach the honey water solution. It cannot possibly drip. After these tiny birds have had their fill of the nectar, they seem to be bubbling over with the sheer joy of living, and will repay you many times over with their aerial acrobatics.

We have been feeding the Hummers for many years and are just as fascinated by them today as we were the first time we saw one sit on the tiny perch, fold his wings, poke his long bill in the small opening and go to work on the goodies.

An UNUSUAL AND THOUGHTFUL GIFT. Sorry, no C.O.D.'s. Price \$2.95. Add 25¢ toward postage. IN CALIFORNIA—add 12¢ tax and 23¢ postage. Full instructions included with each feeder.

Feeder designed by Erwin M. Brown

HUMMINGBIRD HEAVEN
Dept. A, 6818 Apperson Street,
Tujunga, California

California Invites You for 1960

This can be the site of
a two-week adventure
for you exploring the
outdoor world.



Experienced teacher-naturalists guide you at the AUDUBON CAMP of CALIFORNIA, 7000 feet up in the High Sierra near Donner Pass and Lake Tahoe. Here you have the unique opportunity to see how plant and animal communities change with variations in altitude. Every day is an outdoor day exploring — learning — sharing never-to-be-forgotten moments — while a new world of nature is revealed. Each session is packed with stimulating experiences.

Quote: "We shall continue the rest of our lives to find unexpected new sprouts popping up from the seeds planted during our experiences at Sugar Bowl." From a couple who attended California Camp together in 1959.

MAIL TO

National Audubon Society
2426 Bancroft Way, Berkeley 4, California

Please check your first and second choice

- ☐ July 17 — July 30
☐ July 31 — August 13
☐ August 14 — August 27

For anyone 18 years of age or over,
\$105.00 for each two-week session

- ☐ Please send folder
☐ Please register me NOW
(Enclosed find \$20 for Registration fee.
Dates to be confirmed by letter.)

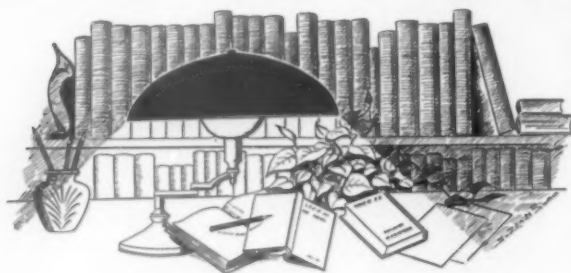
Name _____

Street and Zone _____

City _____ State _____

Audubon Camp of California

BOOK REVIEWS



ZULU JOURNAL

By Raymond B. Cowles, University of California Press, Berkeley, 1959. 9 x 6 in., 267 pp. Illustrated. \$6.00.

By Victor H. Cahalane

The sub-title, "Field Notes of a Naturalist in South Africa," explains the source of this unusual and well-illustrated book. The author is Professor of Zoology at the University of California at Los Angeles. He was born in Natal in 1896 and spent his boyhood in that "Garden Province" of South Africa. Twice, from 1925 to 1927 and again in 1953, he returned to "enjoy natural history studies with a more sophisticated viewpoint" but with less pleasure than he had experienced as a youngster. The book is the synthesis of his scientific observations and boyhood recollections over more than half a century.

It is evident that Professor Cowles is a thorough scientist with a deep love for unspoiled nature. Nothing is too small or "unimportant" to escape his enthusiastic attention, and every detail of structure, coloration, behavior, and ecological relationships is vividly recorded in his notebooks. He is as interested in termites and monitor lizards as he is in the white rhino, one of the biggest of all land mammals, and in the Zulus who once ruled this land. He writes with a combined sensitivity for both science and art, about the teeming and often colorful birdlife, the great dog-faced fruit bats, and the spectacular sunsets of the dry season.

The nuptial flight of termites, the swelling of snakes as they swallow whole eggs, the theft of honey from a swarm of bees by an almost naked native, and the charge of an angry rhino are spell-binding.

These observations sometimes lead to lengthy discussions of biological problems: protective coloration, parasitism

Mr. Cahalane, Assistant Director of the New York State Museum, Albany, spent four months in South Africa in 1950-1951 as consultant to the National Parks Board. He visited the Hluhluwe and Umfolozi Reserves, in Zululand, as an official guest of the Parks, Game and Fish Preservation Board of Natal.

in birds, the evolution of gregariousness, cold torpor in mouse birds (Coliidae). This may delight the thoughtful but discourage the casual reader. The author's sense of humor sparkles at unexpected points: "The presence of rhinos in the bush . . . adds a good deal of zest to what would ordinarily be just plain collecting. . . . It is not surprising that one's resolve not to carry a gun will suffer a fate like that of the monthly resolution to quit smoking."

It is rare that a naturalist is concerned about man as a part of the fauna. Cowles is enormously concerned, not only about man the organism, but over man the destroyer. He likens *Homo* "to healthy rabbits liberated on an island without predators." Out of familiarity with blacks and whites, and from his re-examination of long-known terrain, he traces the history of the population explosion, deteriorating race relationships, and declining productivity of the land. Forced to carry more and more people, the soil erodes and the Zulu economy sinks from cattle to goats and finally to an apartheid existence in the white man's cities. As the problem worsens, the whites redouble their restrictive measures. Yet, "no one seems to recognize that there is one basic and inexorable threat common to all, irrespective of race, color, or creed—the lack of adequate subsistence."

This final chapter, on man and natural resources, is the climax to an outstanding book.

ILLUSTRATED FLORA OF THE PACIFIC STATES, VOL. IV

By Roxana Stinchfield Ferris, Stanford University Press, Stanford, California, 1960. 7 x 10 in., 732 pp. Illustrated with line drawings. Indexed. \$17.50.

By LeRoy E. Detling

This is the final volume of a work, the first three of which were published

Dr. LeRoy E. Detling is Associate Professor of Biology and Curator of the Herbarium at the University of Oregon. His botanical interests have been primarily in systematics, secondarily in ecology, and his research has consisted of taxonomic revisions in several genera and investigations of relict floras in the Pacific Northwest.

When writing advertisers, please mention Audubon Magazine

AUDUBON MAGAZINE

under the authorship of the late Dr. Le-Roy Abrams. It covers the plant families from the Bignoniaceae to the end of Engler's system, with the Compositae naturally taking up most of the volume.

Mrs. Ferris has been Assistant Curator of the Dudley Herbarium at Stanford University since 1929. As such she was closely associated with Dr. Abrams in the preparation of the earlier volumes of the Flora. This, and her experience as a field botanist in various parts of the Pacific States and consequent familiarity with floristic problems in this area, made her the logical person to carry the Flora to completion. She has discharged her responsibility well and the results are a credit both to herself and to Dr. Abrams.

Naturally, a Flora that covers as much territory as is included in the three Pacific states has both advantages and disadvantages for the user. Completeness of coverage demands increased size; and certainly four large volumes are less convenient to handle than one, whether in the field or in the herbarium. And the increase in cost that necessarily goes with this is a deterrent for most students wanting to own the work. On the other hand, although the Flora covers several distinct vegetational units along the Pacific Coast these hold enough in common to make a work of this scope indispensable as a manual and reference work in the herbarium or for the working library of the individual who must deal with the broad aspects of western American floristics.

Volume IV follows the same arrangement of text and illustrations as was adopted for Volumes II and III. Every species is illustrated by line drawings of the plant habit and of significant floral or foliar parts. Drawings are grouped on separate pages rather than appearing individually alongside the appropriate descriptions as was done in Volume I. An extremely valuable feature of the Flora is the very complete synonymy listed for each species. The author has also continued the use of Merriam's Life Zones as the basis for defining the distribution of each species. To one familiar with the vegetational characteristics of these zones, this goes far toward placing the species in its proper ecological setting.

In the preparation of this volume Mrs. Ferris has had the assistance of several well-known and very competent specialists in the taxonomy of certain groups, particularly in the Compositae.

As the publication of the Flora has progressed, I think we have noted an increasing recognition of the number of subspecies involved in some of the species, a tendency continuing into the present volume. This results in the presentation of a much better picture of evolutionary trends, not only within

these species themselves but in the whole West Coast flora, and the reaction of some of the more widespread species to varying environments.

In some of the larger species, the author has furnished keys to the subspecies, a very useful feature which was lacking in the earlier volumes.

This final volume furnishes the user with two other features which had to await the completion of the entire work. One of these is the key to all the families, including those of Volumes I to III. The second comprises the two indices of all included taxa from families down through subspecies and varieties, one of the scientific, and a separate one of the vernacular names. The inclusion of the synonymy in the index of scientific names will prove to be very useful to the worker in systematics.

The long time that has been spent in the completion of this work has been justified by the high quality of this first Flora of the whole Pacific Coast, with its illustrations, complete synonymy, and its scholarly treatment of all taxa.

JUNIOR BOOKS

UNDER A GREEN ROOF (6-8)

By Anne Marie Jauss, J. B. Lippincott Co., New York, 1960. 6½ x 9 in., 64 pp. Illustrated. \$2.95.

By Dorothy A. Treat

A story of American forests with glimpses of 60 of their inhabitants at home in them, and much as we might meet them should we wander quietly along some woodland trail. After a short stay in the mountain forests of New England, we move westward visiting the wooded Blue Ridge Mountains, the Rockies, the Sierras with their big trees, and the wonderful rain forests of the Olympic Peninsula. We travel north to McKinley National Park in Alaska and south into Florida Everglades and to the tropical forests of Puerto Rico.

The book has an abundance of attractive black-and-white wash drawings which combine with the text to create the feeling of a particular area. Anne Marie Jauss has done her own illustrating. She is an artist with many exhibitions to her credit. Born in Germany, she studied art in Munich. But she is a naturalist, too. Behind these stories are many years of travel to study American forests and the creatures that live in them. The artist-author's own enjoyment of the woods and feeling for the children who will read this book and

Dorothy A. Treat is Educational Director at Aullwood Audubon Center, 1000 Aullwood Road, Dayton 14, Ohio.

ZULU JOURNAL

FIELD NOTES OF A NATURALIST IN SOUTH AFRICA

By Raymond B. Cowles

"That very rare thing, a travel book that gives you a real picture not only of the country, but of the people and animals that inhabit it. . . . Some of the beautiful descriptions place the author among the select band of naturalist-observers who not only had the scientific mind but also the acute eyes and ears of poets, people like Fabre, Darwin, Beebe."—N. Y. TIMES BOOK REVIEW

"[Cowles] is a writer of admirable clarity and unusual evocative powers . . . a truly memorable book."—NEW YORKER

\$6.00 At your bookstore or from the

University of
CALIFORNIA
Press Berkeley 4



Dr. William W. H. (Bill) Gunn

of the Federation of Ontario Naturalists
Recorder of Bird Sounds
Student of Bird Migration

Says "Only Audubon Field Notes sets forth the ever-changing dramas of bird migration and distribution as they occur from season to season. See how the information painstakingly gathered in your Region is reflected in the exciting and brilliantly written synopses for the Continent as a whole."

Audubon
Field Notes

SUBSCRIBE TODAY!

Subscription for one year \$3.00
For two years 5.50
For three years 7.50

(Single copies of April issue—
Christmas Bird Count \$2.00)

1130 Fifth Avenue, N. Y. 28, N. Y.

Plan Now to be in Maine in 1960

**An Island Off The Coast
Of Maine Is The Site Of
The First Audubon
Camp. Here An Unusual
Plant And Animal
World Is Waiting To Be
Explored By You.**



The AUDUBON CAMP of MAINE displays a variety of plants and animals — for here the forest comes down to meet the sea. Expert naturalists guide daily field trips to oceanic islands to observe nesting cormorants, gulls, and terns — to explain nature's wonders as they unfold before you — help you gain knowledge and methods of imparting what you learn to others. This beautiful and unspoiled island is maintained by the Society as the Todd Wildlife Sanctuary.

For anyone 18 years of age or over.

Quote: —“This session probably contributed more to my knowledge of nature than any experience I ever had. The staff was superior and the extent of their knowledge amazed me. They certainly keep beginners from becoming discouraged.” From a Maine camper, 1960.

— MAIL TO —

National Audubon Society
1130 Fifth Avenue, New York City 28, N. Y.

Please check your first and second choice

- ☐ July 11 — July 24 (Filled)
☐ Aug. 1 — Aug. 14
☐ Aug. 15 — Aug. 28

\$105.00 for each two-week session

- ☐ Please send folder
☐ Please register me NOW
(Enclosed find \$20 for Registration fee.
Dates to be confirmed by letter.)

Name

Street and Zone

City State

Audubon Camp of Maine

look at the drawings is widened throughout. All material has been carefully checked by authorities in order that these pages might present a true picture of some of the wildlife in American forests.

This is a book to read more than once. Much information has been so skillfully woven into the brief account that it may easily be overlooked. The pictures, too, contain many interesting little details, not apparent at first glance.

Families who like to hike and camp together will particularly enjoy these stories and doubtless will be lured to try vacationing in more and more of America's beautiful varied forests. The book has interest for many ages.

STORY ABOUT LIFE IN THE SEVEN SEAS (10 & up)

By Peter Freuchen with David Roth,
Julian Messner, Inc., New York, 1959.
7 x 10 in., 64 pp. Illustrated with drawings by Wilfred Bronson. \$3.50.

By Dorothy A. Treat

This story of living animals that inhabit the oceans of the world, is concerned with all kinds of sea creatures from those microscopic to the gigantic whales. The reader will explore from shore to open sea and descend into the cold, dark, depths where no light can penetrate. He will learn of some of the strange adaptations for living many ocean animals have made, about their dependence upon each other for food, and how the ocean currents play a part in distributing animal life in the seven seas. The great importance of that vast floating population of tiny plants and animals known as plankton as a basic food for all sea life, is clearly developed, also man's belief that life began in the sea and how the sea may have helped bring this about.

Many have sailed across the oceans, but as yet, few people have entered into the sea to explore it. Today, however, as the author points out, anyone with the aid of a snorkel or an aqualung can become for a time a kind of sea creature himself, free to travel with the fishes through the fascinating gardens of the sea and perhaps meet face to face some of the animals described in this book.

Interesting and abundant drawings on every page, serve not only to illustrate the text but often add much information not elsewhere included.

The book is not to be confused with “Treasures of the Seven Seas,” another book for youth by the same author. Peter Freuchen grew up in Denmark where he lived by the sea. As a young man he took part in many explorations, particularly to the Arctic. Later, he began to write of his adventures. His keen

enthusiasm for all things of the ocean is apparent all through his writings. Many ages will enjoy them, adults too.

A criticism of the book is its briefness. It seems rather like a digest of a digest of a large subject, perhaps cut down to so-called juvenile size. But surely any young person who can read this book could read much more and be happy to do so.

THE YOUNG BIRD WATCHERS

By A. F. C. Hillstead, Faber and Faber, London, England, 1959. 8 1/4 x 5 1/2 in., 196 pp. Illustrated with photographs and drawings. Indexed. 15 s net. \$3.68.

By Mrs. Margaret Y. Wall

Mr. Brian Vesey-Fitzgerald says of the author, “I do not know if Mr. Hillstead would call himself an ornithologist—but I do know that he is a good and intelligent bird watcher (the two qualities do not always go together).”

This is the second edition of “The Young Bird Watchers.” The first edition was written to help young bird students who, though they had good reference books about birds, found many difficulties in bird identification and in finding birds to identify. The author's purpose in the second edition is “to blaze a trail, which anyone with an inclination to birds could follow, and thereby be led to find much pleasure.”

The story begins with an account of a tryout for a football team—a rather unusual way to introduce a bird book. A boy's enthusiasm for a rugby football, his illness which follows is the cause of Mike Ferraby going down to Devonshire to recuperate and thus to begin another interesting hobby—bird watching.

Mr. Nesbitt and his sister Angela live by the sea where a river runs into the sea. It is here that Mike discovers a new world as he walks with Mr. Nesbitt, a well-known ornithologist who was once a very fine rugby player.

Mike learns many of “the tricks of the trade” in bird watching, such as to walk quietly in the woods, to take time and avoid causing alarm, to speak softly, to listen to a bird's song, to observe any peculiar habit of a bird, to know bird habitats, and behavior of bird at time observed.

Interest is added to the bird watching game when Chips, a niece of the Nesbitt's, comes to Devonshire for a holiday visit. Chips takes Mike on one of her special walks and tells him, “The secret is knowing where birds live and keeping your eyes very wide open.” This book is a real adventure into the out-of-doors.

Mrs. Wall is Principal, Caesar Cone Elementary School, Greensboro, North Carolina. In summer, she is an instructor of nature activities at the Audubon Camp of Maine.

While it is written about birds in England, the techniques about successful bird watching are ones that could be used anywhere.

SMALL PETS FROM WOODS (8-15) AND FIELDS

By Margaret Waring Buck, Abingdon Press, New York, 1960. 8¼ x 10¼ in., 72 pp. Illustrated. Bibliography. \$1.75 paper, \$3.00 cloth.

By Dorothy A. Treat

A very practical little book for children, their parents, and teachers, explaining how to get acquainted with toads, frogs, salamanders, spiders, caterpillars, snakes, lizards, and other small creatures by caring for them briefly as pets. Glass jars and plastic containers can often be converted, by suitable planting, into beautiful little gardens simulating the natural homes of some of these small guests. Other cages can be inexpensively made from packing boxes and wire screening or by taping panes of glass together. All this is simply and clearly described and also pictured. The book is fully illustrated with the author's own attractive drawings showing the little animals themselves, a variety of simple cages to comfortably house them, and how to handle and feed these pets.

Miss Buck writes from first-hand experience at her home near Mystic, Connecticut. She writes very understandingly of the animals she describes and anyone who follows her directions may be sure of providing adequate and humane treatment. Very rightly she urges that an animal be kept captive for a short period only and then returned to the native habitat where its presence is important in the natural scheme of things. In the care of birds, and some of the mammals, she suggests ways to attract them instead of caging them, except perhaps in an emergency—if orphaned or injured—and tells of state and federal laws requiring a permit to keep certain species captive.

Many readers who may never before have thought to invite a little backyard neighbor to visit them for a short time will have some very interesting and delightful experiences in carrying out the activities suggested in this book.

THE VOYAGE OF THE BEAGLE (12 up)

By Charles Darwin, abridged and edited by Millicent E. Selsam, Harper, New York, 1959. 9½ x 6 in., 327 pp. Illustrated. \$3.95.

Certainly Darwin's "Journal of Researches into the Natural History and Geology of the Countries Visited During the Voyage Round the World of H. M. S. Beagle under the Command

Continued on page 196

TREE BOOKS

will open a new
world of nature adventures
for you

Here is a Suggested List of Tree Books for identification, reference, and informative reading.

Knowing Your Trees by G. H. Collingwood.....	\$ 6.00
A Field Guide To Trees and Shrubs by George A. Petrides	4.50
Field Book of American Trees and Shrubs by F. Schuyler Mathews.....	3.95
The Tree Identification Book by George W. D. Symonds...	10.00
Illustrated Guide to Trees and Shrubs by Arthur Harmount Graves.....	6.00
An Introduction To Trees by John Kieran.....	2.95
Telling Trees by Julius King.....	2.00
Trees of the South by Charlotte Hilton Green.....	5.00
American Trees by Rutherford Platt.....	3.50
1001 Questions Answered About Trees by Rutherford Platt	5.00
Trees: A Guide to Familiar American Trees by Herbert S. Zim and Alexander C. Martin.....	bound 2.50 Paper 1.00

Tree Books for Juniors

State Trees (10-16) by Olive Earle.....	\$ 2.50
In Woods and Fields (8-16) by Margaret Waring Buck.....	bound 3.00 Paper 1.75
The First Book of Trees (6-10) by M. B. Cormack.....	1.95
Trees and Trails (12-16) by Clarence J. Hylander.....	3.00
See Through The Forest (7-10) by Millicent E. Selsam....	2.50
Play With Trees (7-10) by Millicent E. Selsam.....	2.50
What Tree Is It? (6-10) by Anna Pistorius.....	2.00
Thanks To Trees (8-12) by Irma E. Webber.....	2.25

AUDUBON SOCIETY TREE CARDS IN PREPARATION

Service Department

NATIONAL AUDUBON SOCIETY, 1130 Fifth Ave., New York 28, N. Y.

SLIDES

Birds of America Pl. 217
JOHN JAMES AUDUBON
Louisiana Heron



National Audubon Society
with the cooperation of the
National Gallery of Art, Washington, D.C.

AUDUBON'S

Birds of America

50 Selected
Subjects

IN FULL COLOR

Each slide is an original photograph taken with a special camera produced by Eastman Kodak Company for the National Gallery of Art, Washington, D. C., which has permitted National Audubon Society to have made 400 such photographs of each of 50 selected prints of John James Audubon's elephant folio edition of "Birds of America," of which the Gallery possesses the only unbound copy in the United States.

Boxed in sets of 10 with a descriptive folder in each box giving detailed information about each slide.

Fill out coupon for special offer

NATIONAL AUDUBON SOCIETY
1130 Fifth Ave., New York 28, N. Y.

Please send me folder describing special offer.

Name

Address

City..... Zone... State.....

Your CHILDREN

By Shirley Miller

The Tall Tree



The tall tree,
Is taller than me.
I wish I could see,
The top of the tree.

Oh, please let me see
the top of the tree!
Are there any birds
at the top of the trees?

Deborah Cieszkowski
Grade 3
Lincoln

TIME was when an elementary classroom project on trees was limited to hardly more than recitations of "Under a spreading chestnut tree," and Joyce Kilmer's famous eulogy. But times have changed. And we sat up and took notice when Mrs. Gertrude Dixon's third grade Audubon Junior Club at the Barge-Lincoln School in Yakima, Washington, recently sent us a 40-page scrapbook entitled, "Trees Of Our Valley."

This handsomely illustrated booklet included one third-grader's original painting of the Audubon Emblem on its frontispiece. There followed a parade of tree paintings, leaf prints, tree poems, and tree stories about the many species found in beautiful Yakima Valley—all created by these eight-year-olds. Apparently this project had added meaning to the whole area of their curriculum.

"Trees keep floods from happening," wrote one young conservationist. "They help us to keep our soil by holding onto the ground with roots. The rain water and melting snows won't run off so fast when there are trees."

"The leaves make food for the trees," said a budding scientist. "With the heat and light of the sun on the leaves of the tree it makes food. The roots take minerals and water from the soil. The trunks carry the food."

An embryo economist had this to say: "In Yakima we have many orchards of fruit trees. If any of our fathers and mothers pick fruit they get money for their work. So trees help us to raise our families."

One child's story reflected an interest

in both history and geography. "Trees live a long time," he said. "Redwood trees are the oldest living things on earth. The reason that the redwood trees live so long is that insects don't like that kind of wood. Redwood trees grow in a part of California where the climate is just right. They need lots of fog where the temperature is not freezing."

Then, there was the little girl who viewed the project with a true artist's eye, by stating very simply, "Trees make the world more beautiful."

Our delight in this book, with its evidence of the basic learnings that the children had achieved through the project, prompted us to show it to others who share our enthusiasm for children. A note of appreciation from one great lady, a copy of which was sent to Mrs. Dixon's group, is worthy of record here. She wrote:

"I want to tell you that I found the booklet, 'Trees Of Our Valley,' most interesting. The children of Barge-Lincoln School did a very fine piece of work and you must be proud of them.

"It is most important that children have a knowledge of trees and their value to our country.

"My husband had a deep interest in soil conservation all over our country, and it would have pleased him to see that young people are being taught the importance of conservation.

"With my congratulations and warm good wishes,

Very sincerely yours,
Eleanor Roosevelt."

When writing advertisers, please mention Audubon Magazine

AUDUBON MAGAZINE

Audubon Market Place

CLASSIFIED ADVERTISING

Rates for classified advertising: 15¢ a word; minimum order \$3.00

Binoculars—Telescopes—Microscopes

BINOCULARS & 'SCOPES! See our display ad on first page. **THE REICHERTS**, Mirakel Optical Co., Inc., Mount Vernon 2, New York.

WE'VE REPAIRED BINOCULARS for Birders since 1923. Send for free reprint of our article "How to Check Alignment" published in Audubon Magazine. Mail binoculars to us for free instrument test and return mail estimate—4 day repair service on most jobs. **MIRAKEL OPTICAL CO., INC.**, 14 West First Street, Mount Vernon 2, New York. MO-4-2772. Open Saturdays 10-1, Except JULY and AUGUST.

PROFESSIONAL HELP! Museum Curator is franchised dealer for leading binoculars and telescopes. ALL TYPES, PRICES. HIGHEST TRADE-INS. Immediate answers. POSTPAID. **BARTLETT HENDRICKS**, Pittsfield 59-A, Massachusetts.

AMAZING PRICES prism binoculars, 22 models, \$15.25 and up. Fully guaranteed. Free trial. Folder, "Binocular Selecting," catalog free. Laboratory-medical microscopes also. **Prentiss Importers**, Mercury Bldg., West Los Angeles 25, Calif.

BINOCULARS — REPAIR — RECONDITION — Authorized dealers Bausch & Lomb, Zeiss, French and other imported brands. **Deli & Deli Opticians**, 19 West 44th Street, New York 36, N. Y. MU 7-2785.

BINOCULARS REPAIRED by expert craftsmen. Hard-coating eye cups replaced, all makes. We have optics to repair any make. Collimator alignment to Government specifications. Free check up and estimates, prompt service. Special rates to clubs. All work guaranteed. Binocular cases, any size \$3.00. **I. Miller**, 793 South Third Street, Philadelphia 47, Pennsylvania.

EXPERT REPAIRS on all makes of binoculars — Japanese, German, French, Bausch & Lomb, etc. Parts for almost every binocular regardless of its age. Free estimates, prompt service, all work guaranteed. Special price on binocular cases for 7 or 10 x 35 or 50, \$2.75 each. Established 1921. **Charles W. Mayher & Son**, 6 South Wabash Avenue, Chicago 3, Illinois. Phone Dearborn 2-7957.

BIRDS OF A FEATHER flock together? Your Binoculars repaired so you can tell. Also Generous Trades on Authorized Bausch & Lomb, Carl Zeiss, Hensoldt, Hertel & Reuss, Bushnell, and Sans & Streiff Binoculars. **TELE-OPTICS**, Binocular Repair Service, 5514 Lawrence, Chicago 36, Illinois.

SWIFT BINOCULARS at big discount. My advertisements in this magazine have sold binoculars to many satisfied customers. Send for discount sheet and be another satisfied customer. Can sell 7 x 35 center focus \$24.59 delivered. Inquire about the 8.5x44. It is wonderful. **Charles A. Phillips**, 132 Lincoln Avenue, Syracuse 4, New York.

BINOCULAR CASES. Replacements for 7x50 Japanese binoculars. Finest grade leather. Made for U.S. Gov't. Beautiful dark brown. Strap. Thousands sold at \$15. While they last, \$6. Money back guarantee. **Du Maurier Co.**, Dept. 35-L, Elmira, New York.

Books

BOOKS on Birds, Mammals, Natural History subjects. New or out-of-print. Catalogs furnished. **Pierce Book Company**, Winthrop, Iowa.

BOOKS on Fish, Fishing, Birds, Animals, Nature. Request free catalog listing hundreds of new, used and rare books. **Sporting Book Service**, Rancocas, N. J.

NATURAL HISTORY BOOKS. Entire libraries or small collections purchased at liberal prices. **Nada Kramar**, 927-15th Street, Northwest, Washington 5, D. C.

WANTED — Books and Magazines on Natural History subjects. Any quantity, fair prices paid. **R. RHODES**, 411 Davidson Street, Indianapolis 2, Indiana.

THE REDWOODS by Richard St. Barbe Baker. Magnificent photographs; inspirational text; \$3.95. Request list, other titles. (Many tree lovers will attend Redwood Reunion, Grove of Understanding, September 12th.) **Wellington's**, 346a Concord, Belmont, Massachusetts.

Birdhouses—Feeders—Baths

FISHNET SUET FEEDERS — handnetted only in Maine, of strong fisherman's twine, 50¢ each postpaid. **SEA GARDEN SHOP**, Medomak, Maine.

A POSTCARD BRINGS OUR CATALOG of selected bird watching and attracting products. Feeders, houses, guides, binoculars, cameras, telescopes. Expert advice. **THE BIRDHOUSE**, Plain Road, Greenfield, Massachusetts.

SAMPLE WREN HOUSE or bird feeder one dollar each, postpaid. Guaranteed. Free wholesale literature. **GREENFIELD WOOD PRODUCTS**, Youngs Creek, Indiana.

Camping—Travel

FAMILY STYLE VACATIONS with hiking, swimming, fishing. Special programs for children and parents. Emphasis on Nature Study. California Sierra Nevada near Lake Tahoe and Desolation Valley Primitive Area. Write **Fallen Leaf Lodge**, Fallen Leaf, California.

CAMP DENALI, MCKINLEY PARK, ALASKA — A wilderness retreat in the Alpine sub-arctic for those wishing to exchange commercialized amusements for the genuine delights of nature. Special session for studying birds and plants of the tundra. Box 526, College, Alaska, for brochure.

RELAX. Delightfully un-commercialized lake, mountain region. Beach, shuffleboard, minerals, outdoor lunches. From \$49.00 week with meals. Folder. **WELD INN**, Weld, Maine.

PISGAH FOREST INN. Rustic Inn, 5,120 feet high, 629 feet below peak of Mt. Pisgah in National Forest. Panoramic view of mountains and valleys; foot trails, wild flowers, Flame Azalea, Mountain Laurel, Rhododendron, birds everywhere. Secluded, comfortable: Open Fires, private baths, delicious food in truly rustic setting. Restful, invigorating. May thru October. Tel. answering service, Asheville — ALPINE 3-0771. P.O. Candler, North Carolina, Box 433, Route #1.

NATURELOVERS VACATION at secluded countryplace. Interesting wildlife. Swimming, boating, fishing, trails. Adults only. Each room with private bath, excellent homecooking. Weekly rates: \$55.00 each, for couple; \$65.00 for singles. Write for folder. **JOHN AND BEATRICE HUNTER**, Hillsboro, New Hampshire.

RESTFUL WOODLAND HIDEAWAY for vacation or week-end in the Adirondacks. Comfortable, attractive accommodations, excellent meals, swimming, boating, fishing, hiking. Abundant wildlife, deer, raccoons and 150 birds identified. Open April through November. **MOORLANDS ON SILVER LAKE**, Cranberry Lake, New York. Phone—Star Lake 8715.

DAVID'S FOLLY. West Brooksville, Maine, offers you country living on a saltwater farm on the coast of Maine. A vacation of informality and simplicity amid beautiful surroundings and congenial people. Our woods and meadows harbor birds and plants of many varieties. Sea food, blueberry pies, organically raised vegetables, and a coffee pot always on the stove. May to November. \$60 to \$65 per week. **MINERVA E. CUTLER**.

CHICKADEE RIDGE—Centrally located for Cape Cod birding. Quiet, off Route 28 on Salt Pond. 3 rooms and bath housekeeping unit in Cape Cod home. Rental by week, month, season. **MRS. MARGUERITE R. FORD**, Chickadee Ridge, Chatham Road, Orleans, Massachusetts.

THE FALES—BERKSHIRE HILLS. 500 acres woods, meadows, ponds. Individual cottages—rooms—private baths—thermostat-controlled heat—fireplaces. Beaver colony, bird sanctuary, trails, swimming, fishing. Excellent food. Reduced rates September. **John and Shirley Brooks**, Williamstown, Massachusetts.

HIRAM BLAKE CAMP, Cape Rosier, Maine—On Beautiful East Penobscot Bay—Announces the 44th Consecutive Summer Season—June 27 through Labor Day—Family Cottages and Lodge—Central Dining Room—Sea-going and nature-loving—Licensed Passenger Boat scheduling daily trips to Bay and Islands—Sea Birds nesting grounds—Sailboats, Outboards, and Rowboats—Island lobster picnics—Deep-sea Fishing Trips—Saltwater Swimming—Delightfully remote—Refreshingly cool all summer—All the advantages of an island without the disadvantages on our 100 acre waterfront site—American Plan \$48 to \$65 weekly—Advance reservations necessary—Write for Camp Prospectus.

GOOD BIRDING at your door! Lovely New England Inn. Woodland setting. Undisturbed comfort. **Edson Hill Manor**, Stowe 3, Vermont. Alpine 3-7371.

GULF VIEW INN, Captiva Island, Florida, on the Gulf of Mexico. Good food, comfortable beds, airconditioned rooms, low summer rates. Wildlife Sanctuary nearby. Fishing, boating, and swimming excellent.

FAIR, REMOTE ISLE—Monhegan—at sea beyond Maine's rugged shores. Its storied cliffs challenge the energetic . . . its gentle slopes invite relaxation. **Halcyon** offers peaceful quiet amidst modest luxury, after following the whisk of elusive wings. Lodging only—except for coffee-in-bed, or before-the-fire! **Nelson, Franklin Park**, New Jersey.

SNOWBIRD MOUNTAIN LODGE—Robbinsville, North Carolina. Quiet, secluded, small. Located on a low mountaintop in the heart of the Nantahala National Forest. No cottages. American and modified American Plan. Member AAA. Duncan Hines Recommended. Excellent cuisine. Write for folder.

Color Slides—Films

WILDLIFE OF ALASKA 16 or 8mm movies, 35mm color slides; Walrus, sheep, caribou, moose, goat, bear, glaciers, Lake George Break-up, wildflowers, small animals, birds, sport fishing and Eskimo dances. **ELMER & LUPE KING**, Wildlife Photographers, Alaska Film, Box 5-621, Mt. View, Alaska.

FREE every month—Blackhawk's newspaper-size catalog 8mm., 16mm. movies, 2" x 2" color slides—wildlife, railroad, circus subjects. Biggest selection in USA. Bargains in used 16mm. sound films, projectors. **BLACKHAWK FILMS**, Davenport 6, Iowa.

BIRD MOVIES IN COLOR 16mm and 8mm Whistling Swans, Golden Plover, Wandering Tattler, Ptarmigan, Arctic Tern, Bald Eagle and Jaeger. **Alaska Film**, Box 5-621, Mt. View, Alaska.

CINE SPECIAL II outfit for sale by owner. Fine condition. \$1095. Cash. **John H. Gerard**, 628 East 29th Street, Alton, Illinois.

BIRDS OF INDIANA in direct color. 2x2 projection slides from exclusive close-up photographs—used by students, instructors, clubs. Twelve slides, \$5.00. Twenty-five, \$10.00. Sample and list 50¢. **J. M. Stemen**, Goshen, Indiana.

Wildlife Recordings

SOUNDS OF NATURE: Produced by the Federation of Ontario Naturalists and now available in USA. Volumes 4 **WARBLERS** Volume 6 **FINCHES:** Catalogue from **FON Edwards Gardens**, Don Mills, Ontario, Canada.

Miscellaneous

HUMAN-ANIMAL RELATIONSHIP. \$2.00 for one year, \$3.50 for two years, \$5.00 for three years. Published quarterly. **OUR PET WORLD**, 240 West 75th St., New York City 23.

"GEMS & MINERALS MAGAZINE," largest rock hobby monthly. Field trips, "how" articles, pictures, ads. \$3.00 year. Sample 25¢. Box 687L, Mentone, California.

CLASSIFIED Continued

WOODLAND WILDLIFE NOTEPAPER. Designs look handdrawn. Special Assortment: 24 sheets, envelopes; 18 designs, 8 colors, 3 styles, \$1.00. **HOOVER HANDCRAFT, Grand Marais, Minnesota.**

BACKWOODS JOURNAL—Simple living in the world of nature. \$1.00 year, 20¢ copy. **LOG CABIN LIFE, Old Forge 4, New York.**

FIELD MEN—STUDENTS—LANDOWNERS. Our practical training programs in Forestry-Wildlife-Soil Conservation through supervised home study will equip you with technical skills needed on the job. Special field training and placement service for career students. Write Dept. "F," **NATIONAL SCHOOL OF FORESTRY AND CONSERVATION, Wolf Springs Forest, Minong, Wisconsin.**

MOTEL. 11 units with restaurant, owner's apartment and help's quarters. Gulf of Mexico frontage on Captiva Island, Florida. A money-maker for owner-operator. \$26,500 will handle. Write **Gulf View Inn, Captiva Island, Florida.**

UP TO \$300 extra money. Show friends fabulous self-selling **EVANS Christmas Card, Gift Line.** Profits to 100%. Send no money—write for sample boxes to be paid for or returned, plus big Free Album Personalized Cards, 2 Catalogs 300 items. **NEW ENGLAND ART PUBLISHERS, North Abington 783, Massachusetts.**

WHITTLED WOODEN BIRDS. Painted in oils. Robin, bluebird, goldfinch, tanager, kinglet, chickadee. 1½ inch, \$1.25; 3¼ inch, \$3.25. Postpaid. Complete with base. Use in flower arrangements, on driftwood, etc. **JAMES EUBANKS, 426 Riverside, Knoxville 15, Tennessee.**

RESEARCHERS: Use fast, accurate Metzger's Table of 45,000 Percents. Range: To 100.00%; 309 denominators; 309 numerators; 55 pages; \$5.00. Order from: **METZGER, Dept. 965, Box 717, Atlanta 1, Georgia.**

RUN A SPARE-TIME Greeting Card and Gift Shop at home. Show friends samples of our new 1960 Christmas and All Occasion Greeting Cards and Gifts. Take their orders and earn to 100% profit. No experience necessary. Costs nothing to try. Write today for samples on approval. **REGAL GREETINGS, Dept. 12, Ferndale, Michigan.**

NATURE IN THE NEWS—

Continued from page 179

a hunting preserve for Saxon and Norman kings.

There were periods when the watchers outnumbered the watched and the highly varied plumage of the procession, including umbrellas, field glasses, stalking hats, tweed jackets and rubber boots, outshone the more modest camouflage of the quarries.

The commemorative was arranged by the Nature Conservancy, Britain's national wildlife conservation agency.

The purpose was to honor Roosevelt and Sir Edward, "two great statesmen who on different sides of the Atlantic drew perennial inspiration from nature."

Among the prominent American ornithologists and naturalists in the party today were Fairfield Osborn, author and president of the New York Zoological Society; Carl W. Buchheister, president of the National Audubon Society; Prof. Gustav Swanson, head of the Department of Conservation, Cornell University; Fred Packard, formerly executive secretary of the National Parks Association; and Dr. Edward H. Graham, of the United States Soil Conservation Service. —THE END

A THORNY ASSIGNMENT—

Continued from page 182

peared to be in a temporary trance—one that could be broken only by touching her.

We had many amusing incidents together. Twice she fell off the studio table: once on her back on the floor. She was surprised but not hurt; the second time she fell off into a dishpan of cold water, and that did not seem to irritate her either.

She had the run of the living room on those days I was there. I watched the furniture closely and it was not gnawed or scratched. Most of the time she would sit, hunched up, half

asleep, or go through her "exercise dances." The uniqueness of having a porcupine as a pet was tempered by Agnes's tranquillity, and no pun is intended.

The smoothness with which this thorny assignment was accomplished was a credit to Agnes, and of much puzzlement to Clayton Freiheit of the Buffalo Museum of Science. On the day I returned her to Clayton he looked for telltale marks on my hands. There were none.

He asked, "Did you handle her or pick her up?"

"Sure," I replied, "and I have one piece of advice if you don't want quills in your face. Don't blow on her tail!" —THE END

BOOK REVIEWS

Continued from page 173

of Captain Fitzroy, R. N.," which has come to be known under the more manageable title of "The Voyage of the Beagle," is one of the great adventure stories of all time; yet the number of readers who have been put off by the Victorian propensity for bringing out long books with long-winded titles, and of crowding their contents into a cramped and squint-producing format, must be considerable. At any rate this reviewer, who first tackled Darwin at a fairly advanced age, confesses to being one of that number. To all such adults, as well as to the teen-age audience for whom it is intended, this intelligent and handsomely produced abridgment is hereby heartily recommended. Some adults may wish the editor and publisher had seen fit to include an index, and may wonder whether bird-minded younger readers not versed in scientific nomencla-

ture might not have appreciated knowing, for example, that the South American birds of the genus *Molothrus*, to which Darwin refers simply as "allied to the starling," are more closely related to the North American cowbird, or having the "mocking-thrushes" of the Galapagos identified as belonging to the same family as our own mockingbirds and thrashers. But these are relative quibbles. Besides being wonderful reading, this edition, with its explanatory chapter introductions, in fact constitutes the liveliest imaginable introduction to the theory of evolution by natural selection, and to the various ecological problems with which conservationists continue to wrestle. Mrs. Selsam is too wholehearted an admirer of Darwin, both as a scientist and as a person, to offer anything like a critique of his career; but there are several of those around already, and what she does offer is likely to be, for most readers, worth a good deal more.

OTHER BOOKS RECEIVED

A BOOK ABOUT BEES

By Edwin Way Teale, Indiana University Press, Bloomington, 1959. Paperback, 5 x 8 in., 298 pp. Illustrated with photographs by the author. Indexed. \$1.95. Originally published as "The Golden Throng."

AFRICA IS ADVENTURE

By Attilio Gatti, Julian Messner, Inc., 8 West 40th Street, New York, N. Y., 1959. 5¾ x 8½ in., 249 pp. Illustrated with photographs. \$4.50.

WILDLIFE IN MEXICO

By A. Starker Leopold, University of California Press, Berkeley, 1959. 7½ x 10 in., 568 pages. Illustrated with photographs and line drawings. Indexed \$12.50.

JUNIOR BOOKS

BOY SCOUT HANDBOOK

Edited by William Hillcourt, Boy Scouts of America, New Brunswick, New Jersey, 1959. 8 x 5½ in., 480 pp. Illustrated. Indexed. \$1.00.

EXPLORERS AND PENGUINS

By Edna M. Andreas, Charles Scribner's Sons, New York, N. Y., 1959. 6¼ x 8¼ in., 90 pp. Illustrated with pictures by Marilyn Miller. \$2.75.

JINGO: WILD HORSE OF ABACO

By Jocelyn Arundel, Whitteley House, New York, N. Y., 1959. 6¼ x 9¼ in., 139 pp. Illustrated with pictures by Wesley Dennis. \$2.95.

KITTENS, CUBS & BABIES

By Miriam Schlein, William R. Scott, Inc., New York, N. Y., 1959. 8¾ x 10 in., 46 pp. Illustrated with pictures by Jean Charlot. \$3.00.

Announcing

Summer Audubon Wildlife Tours

*by Station Wagon and Boat to DUCK ROCK, FLORIDA
and the CORKSCREW SWAMP SANCTUARY*

Here is your opportunity to witness one of the thrilling sights of the avian world—the evening flight of thousands and thousands of colorful birds, including herons, ibis, egrets, and frequently roseate spoonbills, as they wing their way in seemingly endless waves from their day's feeding grounds in the EVERGLADES to DUCK ROCK in the TEN THOUSAND ISLANDS on Florida's wild southwest coast.

These one-day tours base at Miami and journey by station wagon from there to Everglades City on the west coast, where the group transfers to one of the Society's boats for the cruise down the coast to Duck Rock, where this show is staged. A picnic supper is served on board as the group watches this unbelievable evening flight, and in the late twilight it cruises back to Everglades City and its return trip by station wagon to Miami.

Two-day trips are conducted every Saturday and Sunday during the summer, also, combining the first day at Duck Rock with a second day at fabulous CORKSCREW SWAMP SANCTUARY.

These summer tours run through September 4, 1960.
For complete details about dates and cost, write to

NATIONAL AUDUBON SOCIETY
143 N. E. 3rd Avenue, Miami 32, Florida



Audubon Christmas Card for 1960



DRAWN FROM NATURE BY J. J. AUDUBON, F.R.S., F.L.S.

White-winged Crossbill

LOXIA LEUCOPTERA GM

Male adult, 1. 2. Female adult, 3. Young, F. 4.
New Foundland alder.

A reproduction in full color of John James Audubon's plate #364 White-winged Crossbill has been selected for this year's Christmas Card. The green leaves of the New Foundland alder and the red birds bring to this card the Christmas coloring.

The cards measure 5" x 7"
— 20 cents each — 10 for \$1.75
— 25 and any quantity over, 15 cents each. Envelopes included.

The message reads:

Christmas Greetings and all
Good Wishes for a Happy New
Year."

*We regret to say that we cannot
take orders for imprinting names.*

*Please add 25 cents for orders
under \$5.00 and 50 cents for orders
over \$5.00 for postage and handling.*

FROM 1959

First come! First served!

There are some of the 1959 cards available, picturing a saw-whet owl
in white pine in full color by Don R. Eckelberry.

*Cards measure 5" x 7". 15 cents each for any quantity. Envelopes included.
Postage rates and message as stated above.*



Service Department

NATIONAL AUDUBON SOCIETY, 1130 Fifth Ave., New York 28, N. Y.

